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NWS EARLE

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DATA USABILITY WORKSHEETS SITES 41 AND 46 WITH TRANSMITTAL MWS EARLE NJ

11/5/2012

TETRA TECH



**TETRA TECH**

PHIL-24997

November 5, 2012

Project Number 02091

Naval Facilities Engineering Command Mid-Atlantic  
Northeast IPT  
9742 Maryland Avenue  
Norfolk, Virginia 23511-3095

Attn: Mr. Roberto Pagtalunan

Reference: CLEAN Contract No. N62470-08-D-1001  
Contract Task Order (CTO) No. WE15

Subject: Submission of Final Site 41 and Site 46 Data Useability Worksheets  
Naval Weapons Station (NWS) Earle  
Colts Neck, New Jersey

Dear Mr. Pagtalunan:

Enclosed are the Final Data Useability Worksheets for Site 41 (EPIC Site L) - MSC Van Parking Lot and Site 46 (EPIC Site Q) - Military Sealift Command Firefighting School. The worksheets were revised in accordance with EPA's review comments on the draft final version (dated July 24, 2012).

As requested by the Navy, copies of these documents are being forwarded under cover of this letter to Ms. Jessica Mollin at EPA Region 2 and Ms. Erica Bergman at NJDEP for their review. Both hard copy and electronic (CD) formats of the documents are being provided to each recipient.

We appreciate the opportunity to provide these services to the Navy. Please contact me if you have any questions or require additional copies.

Sincerely,

Mary M. Mang  
Project Manager

MMM/nfs

Enclosure

c: Bonnie Capito (NAVFAC Midwest) (no enclosure)  
Scott Fleming (NWS Earle) (1 copy)  
Jessica Mollin (EPA Region II) (2 copies)  
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**Response to EPA Comments Dated September 11, 2012 on Site 41 and Site 46 Data**  
**Useability Worksheets**

**Naval Weapons Station Earle  
Colts Neck, New Jersey**

**October 2012**

**Sites 41 and 46**

- 1) Page 1. The introductory paragraph, last sentence, requires updating to indicate that the assessment for data useability is designed to evaluate whether the data is appropriate for use in the human health risk assessment.

**Response: The introductory paragraph was revised as suggested.**

- 2) Page 1, Paragraph 3. The document should indicate whether the sampling plans, methods, etc. were reviewed by EPA's QA/QC staff in 1996.

**Response: A statement was added to indicate the work plan was reviewed by EPA.**

- 3) Page 1, Paragraph 5. The discussion of quantitation limits "low/medium CLP analytical protocols" and their applicability to the human health risk assessment should be reviewed by the QA/QC staff in EPA's Division of Environmental Science and Assessment (DESA).

**Response: The revised data usability discussion and worksheets are being submitted for review by EPA as appropriate.**

- 4) Page 2. The discussion regarding detection limits above the Regional Screening Levels needs to explain that these values are based on residential exposures established at a risk level of  $10^{-6}$  (one in a million risk) or a Hazard Index = 0.1 where the goal of protection is an HI = 1. The exceedence of either of these values, may still indicate that at the detection limit the concentrations remains within the risk range (i.e.,  $1 \times 10^{-6}$  to  $1 \times 10^{-4}$  (one in ten thousand) or below the goal of protection of an HI = 1. For example, the concentration of 0.22 ppm in soil for PCBs is based on a risk of  $10^{-6}$  risk level while the detection limit of 0.33 mg/kg is at a risk level of approximately  $2 \times 10^{-6}$  that remains within the risk range of  $10^{-4}$  to  $10^{-6}$ . Further discussion regarding this issue should be included in the discussion of the exceedence of the screening limit.

**Response: The suggested text has been added.**

- 5) Page 2. The text should include a paragraph regarding the Regional Screening Level Tables and their use in the comparison. Suggested language is provided below:

“To evaluate the applicability of the concentrations found in soil the detected concentrations were compared to screening levels derived from the Regional Screening Level (RSL) Tables available from: <http://www.epa.gov/region9/supeffund/prg/>. The RSLs are developed using risk assessment guidance from the EPA Superfund program. The values are risk-based concentrations derived from standardized equations combining exposure information assumptions with EPA toxicity data. SLs are considered by the Agency to be protective for humans (including sensitive groups) over a lifetime; however, SLs are not always applicable to a particular site and do not address non-human health endpoints, such as ecological impacts. The chemical-specific SLs are generic; they are calculated without site-specific information. They may be recalculated using site-specific data during the baseline human health risk assessment. The comparison values provided are based on exposures to a future resident or future worker in this area exposed to concentrations associated with a cancer risk of  $1 \times 10^{-6}$  (one in a million) or a non-cancer Hazard Index (HI) = 0.1 to consider the potential for exposure to multiple chemicals with similar health endpoints. The goal of this evaluation is to determine whether the concentrations found in the soil remains within the risk range and therefore the concentration detected is still appropriate for inclusion in the baseline human health risk assessment.”

The text should also indicate that based on an evaluation of the data, the data analysis indicates that it is appropriate to include this data in the baseline human health risk assessment for the Sites #41 and #46.

**Response: The suggested text has been added.**

6) Table 1-2 and all other Tables:

- For chemicals such as sodium, calcium, magnesium, etc. the list of the SLs should indicate that they are nutrients and will not be further evaluated in the risk assessment.
- The values listed should indicate whether they comparison value is based on a cancer risk or a non-cancer Hazard Index = 0.1. For example, the Table should indicate c for carcinogens and nc for non-carcinogens.
- The discussion regarding chromium requires additional information indicating that chromium has multiple valence states. Hexavalent chromium exists in alkaline, strongly oxidizing environments and Trivalent chromium exists in moderately oxidizing and reduced environments and there is a potential that the soil contamination is not all chromium +6 but a mixture of chromium +3 and chromium +6 but the exact percentage of each was not speciated at the time of the analysis. Therefore, to be protective, the comparison is based on the data for chromium +6 and this uncertainty will be discussed in the Risk Characterization portion of the report.
- The comparison values for PCBs are presented as total PCBs consistent with the U.S. EPA. PCBs: Cancer Dose-Response Assessment and Application to Environmental Mixtures (1996). U.S. Environmental Protection Agency, Office of Research and Development, National Center for Environmental Assessment, Washington Office, Washington, DC, EPA/600/P-96/001F, 1996. The evaluation of total PCBs for carcinogenicity is based on total PCBs and not individual Aroclors. The values presented for comparison for all Aroclors listed should be 220 ug/kg for residential soils.

**Response: The suggested text and footnotes have been added.**

- 7) Worksheets. It is recommended that these sheets be reviewed by DESA to assure that there are no issues with the QA/QC of the data. For example, Page 2 of the Spreadsheet, Data Validation, indicates that 100% of the laboratory data was validated following Region 2 SOPs. This statement should be reviewed by DESA.

**Response: The revised data usability discussion and worksheets may be reviewed by EPA as appropriate.**

### **Site #46**

- 1) Table 1-3 - Firefighting School. The text regarding the Regional Screening Levels (provided above) should be updated to indicate that the SLs used are based on a surface soil contact under a residential and industrial exposure scenario. It should also be clarified in the text that it is assumed that the soil will become available at the surface following activities in the future where appropriate management of the soil was not included in the management plan.

**Response: The text has been edited as suggested.**

- 2) Table 1-4 - Firefighting School. The Table requires updating to reflect the potential for exposures to sediment through soil ingestion and dermal contact. The residential and industrial 2 SLs previously provided in the other tables (i.e., Tables 1-1 to 1-3) should also be included in the Table as comparison values. The text regarding the SLs (provided above) should indicate that the potential exists for an individual to be exposed to the sediments through direct contact i.e., ingestion and dermal contact. The Sediment Ecological Toxicity Threshold Values would be appropriate for inclusion in the Ecological Risk Assessment.

**Response: The sediment table has been edited to include residential and industrial RSLs.**

- 3) Table 1-5 - Firefighting School. The text describing this Table should indicate that these values are based on residential tapwater concentrations.

**Response: The text has been edited as suggested.**

**DATA USEABILITY WORKSHEET**  
**Site: NWS Earle Site 41 (EPIC Site L) – MSC Van Parking Lot**  
**Medium: Soil**

Details regarding the EPIC Site L sampling and analytical program and data quality objectives were presented in the NWS Earle Remedial Investigation (RI) Work Plan and Quality Assurance Project Plan (QAPP) (Halliburton NUS, 1995) and the NWS Earle RI report (Brown & Root Environmental, 1996). Relevant supporting information is summarized in the following paragraphs to facilitate the evaluation of data usability worksheets. The assessment for data usability is designed to evaluate whether the data are appropriate for use in the human health risk assessment.

EPIC Site L is comprised of a 15.7-acre area near Asbury Avenue and Pine Brook Road within the Mainside Area of the NWS Earle facility. About one-third of the site was used at one time for storage of new and old telephone poles, railroad ballast stone, miscellaneous metal, plastic, and wood scrap material, and small asphalt and concrete piles. Materials from activities conducted by the NWS Earle Public Works Department have been stored at the site for 25 to 30 years, and past storage practices are not well documented.

Previous investigations included a 1992 Preliminary Assessment Addendum comprised of interview findings and aerial photo analyses. Physical observations from the field consisted of a stained area near a treated utility pole storage area and a hardened pile of asphalt.

The primary objective of the RI was to determine if storage and disposal activities have impacted site soils. The 1995 work plan for the NWS Earle RI was reviewed by EPA and responses and revisions were addressed by the Navy. During the RI field investigation, seven surface soil samples and one field duplicate were collected at the locations shown in the attached Figure 28-1, extracted from the 1996 RI report. Of the seven locations, L-SS-01 was collected from the asphalt pile area along the power line for the purpose of determining if asphalt storage has impacted soil. Two surface soil samples, L-SS-02 and L-SS-03 (plus one field duplicate), were collected from the pile of telephone poles to determine if telephone pole storage has impacted soil. Sample L-SS-04 was collected from the asphalt pile north of the site to evaluate if past/current storage activities have impacted soil. Three samples, L-SS-05, L-SS-06, and L-SS-07, were collected at drainage depressions or areas where offsite migration was possible to determine if contamination may be moving from the site. During field sampling, no problems were encountered that would have suggested any issues with sampling precision, accuracy, representativeness, or completeness. As stated in Section 3.2 of the RI work plan, soil sampling was conducted according to Halliburton NUS SOPs and the New Jersey Department of Environmental Protection and Energy (NJDEPE) Field Sampling Procedures Manual.

Surface soil samples were submitted to Lancaster Laboratories for Target Compound List (TCL) volatile organic compounds (VOCs), TCL semi-volatile organic compounds (SVOCs), total petroleum hydrocarbons (TPHs), Target Analyte List (TAL metals), and TCL pesticides/polychlorinated biphenyls (PCBs) analyses following low/medium concentration EPA Contract Laboratory Program (CLP) scopes of work (SOWs). The laboratory's nominal quantitation limits for organics and required detection limits for inorganics achieved the method

**DATA USEABILITY WORKSHEET (continued)**  
**Site: NWS Earle Site 41 (EPIC Site L) – MSC Van Parking Lot**  
**Medium: Soil**

requirements referenced in the QAPP/Work Plan. The organic quantitation limits and inorganic detection limits in the most recent versions of the low/medium CLP analytical protocols (SOM01.2 and ISM01.2) are generally within a factor of two compared to the contract required quantitation limits (CRQLs) for the analytical methods from the 1996 RI (OLM01.8 and ILM02.1). In the 1996 RI, nominal values for VOC CRQLs were 10 ug/kg, SVOC CRQLs 330 ug/kg (830 ug/kg for low response compounds), pesticide CRQLs 1.7 or 3.3 ug/kg (except for methoxychlor and toxaphene), and PCB CRQLs 33 ug/kg. In contrast, the current CLP SOW SOM01.2 specifies nominal values for VOC CRQLs of 5 ug/kg (10 for ketones), SVOC CRQLs of 170 ug/kg (330 for low response compounds), pesticide CRQLs of 1.7 or 3.3 ug/kg (except for methoxychlor and toxaphene), and PCB CRQLs of 33 ug/kg.

The RI report's sample detection limits were based on instrument detection limits (IDLs) reported by Lancaster Laboratories as adjusted for sample weight and moisture. The IDLs were all less than or equal to the contract required detection limits (CRDLs) specified in the CLP routine analytical services SOW. Recently, the CLP's inorganic CRDLs have been lowered by a factor of two for several metals. In the 1996 RI data set, the inorganic sample detection limits were all less than the CRDLs from the current CLP SOW. The inorganic detection limits for non-detected results are shown for all surface soil samples collected at Site L in the attached Table 1-2.

To evaluate the applicability of the concentrations found in soil, the detected concentrations were compared to screening levels derived from the Regional Screening Level (RSL) Tables available from <http://www.epa.gov/region9/superfund/prg/>. The RSLs are developed using risk assessment guidance from the EPA superfund program. The values are risk-based concentrations developed from standardized equations combining exposure information assumptions with EPA toxicity data. RSLs are considered by the agency to be protective for humans (including sensitive subgroups) under exposure conditions applicable to certain types of receptors. For example, the residential exposure RSLs are protective for humans over a lifetime, covering an exposure duration considered to represent the reasonable upper range duration living at one residence based on demographic studies. The industrial exposure RSLs are protective for adult workers over an exposure duration considered to be the reasonable upper range duration of employment at one company, based on employment studies. RSLs are not always applicable to the exposure scenarios unique to a particular site and do not address non-human health endpoints, such as ecological impacts. The chemical-specific RSLs are generic; they are calculated without site-specific information. Exposure assumptions may be recalculated using site-specific information during a baseline human health risk assessment (HHRA). In a HHRA, the goal of the comparison of detected concentrations to RSLs is to determine whether the concentrations found in the soil are within an acceptable limit, such that those chemicals that are present at concentrations that could contribute to significant risks (above RSLs) are carried through the quantitative risk assessment, while chemicals with concentrations less than RSLs do not require a detailed estimation of risks from site exposures.

Organic and inorganic detected sample concentrations and sample detection limits were compared to the May 2012 residential soil exposure and industrial soil exposure RSLs as tabulated in the right-hand column of Table 1-2. The RSL values are based on receptor exposures established at a cancer risk level of  $1 \times 10^{-6}$  (one in a million risk) or a noncarcinogenic toxicity-based hazard

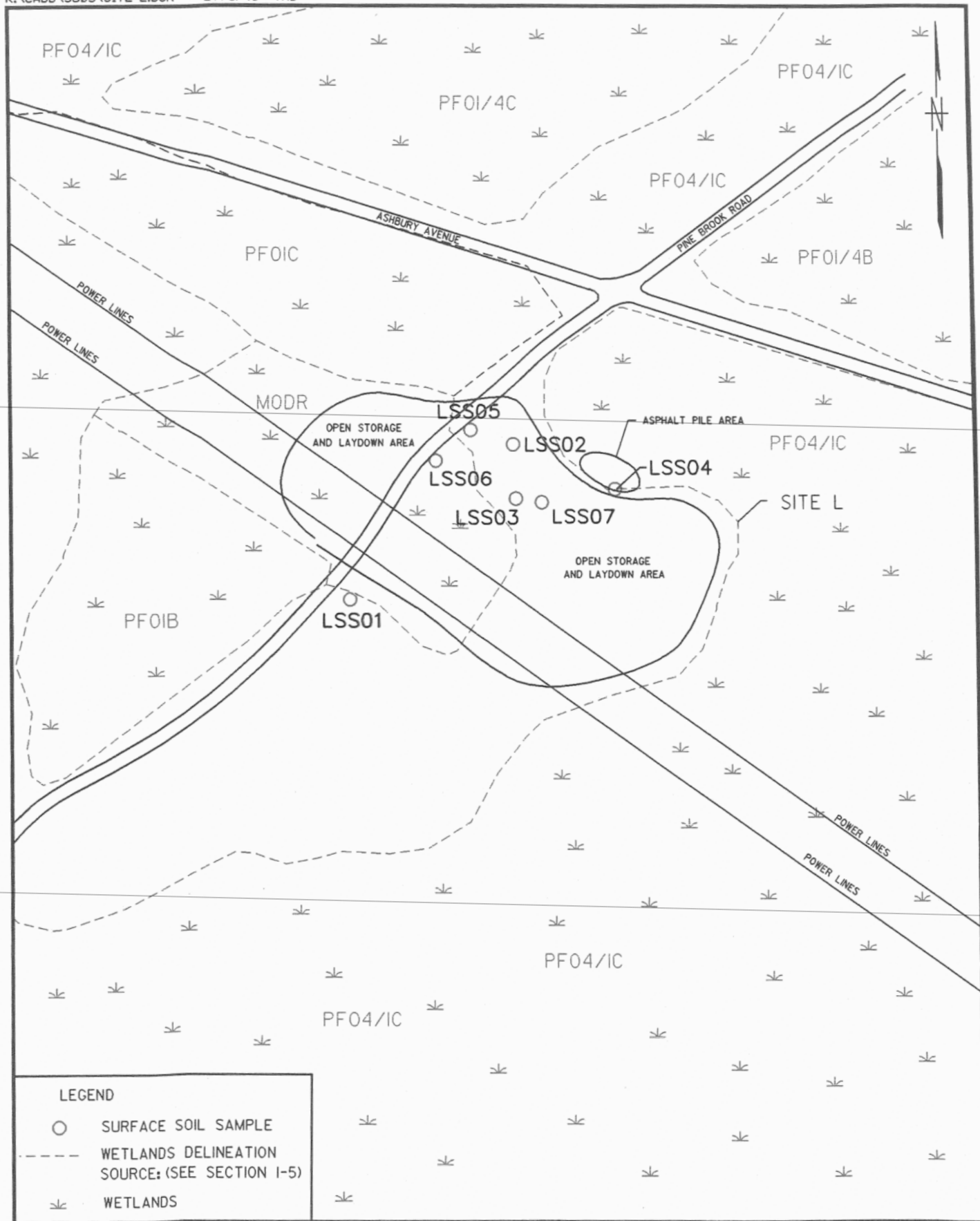
**DATA USEABILITY WORKSHEET (continued)**  
**Site: NWS Earle Site 41 (EPIC Site L) – MSC Van Parking Lot**  
**Medium: Soil**

index (HI) of 0.1 where the goal of protection is a cumulative HI of less than 1 for additivity across chemicals affecting the same target organ. The exceedance of either of these values may still indicate that at concentrations equal to the detection limit, the potential risks may remain within the acceptable risk range (i.e., cancer risk between  $1 \times 10^{-6}$  and  $1 \times 10^{-4}$  or below the goal of protection of a HI of 1. For example, the concentration of 0.22 ppm in soil for PCBs is based on a risk of  $1 \times 10^{-6}$  while the detection limit of 0.33 mg/kg is at a risk level of approximately  $2 \times 10^{-6}$  that remains within the risk range of  $1 \times 10^{-6}$  to  $1 \times 10^{-4}$ .

Inorganic sample detection limits were below their respective residential RSLs except for two metals, arsenic and thallium. Thallium is not expected to be associated with the types of materials stored or disposed at the site. With respect to arsenic, all sample results except one were positive, which enables a fairly representative evaluation of soil arsenic distribution. In Table 1-2, the SVOCs that exhibited sample quantitation limits greater than their respective RSLs included N-nitroso-di-N-propylamine, bis(2-chloroethyl)ether, hexachlorobenzene, and pentachlorophenol. None of these substances were found in any soil samples or were anticipated to be found in the types of materials used or disposed at the site. Certain carcinogenic polycyclic aromatic hydrocarbons (PAHs) also exhibited detection limits that were greater than residential RSLs, including benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene. For most of these PAHs, detections occurred in several samples at levels near or below the CRQLs, since the method of analysis provides the ability to detect and report estimated concentrations down to a small fraction of the CRQL. In conclusion, the analytical methods used achieved the quantitation/detection limits required by routine CLP analytical services low/medium concentration methods and were able to determine the presence or absence and quantify TCL/TAL substances found at concentrations of interest at the site. Comparison of data to RSLs indicates that the analytical data are considered of appropriate quality for purposes of evaluation of potential human health risks.

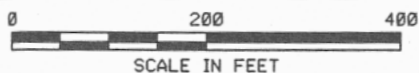
**FIGURE 28-1**

**(Reference: Remedial Investigation Report for Naval Weapons Station Earle.  
July 1996. Brown & Root Environmental.)**



**SAMPLE LOCATIONS**  
**EPIC SITE L-MSC VAN PARKING LOT**

**FIGURE 28-1**



**TABLE 1-2**

**(Reference: Remedial Investigation Report for Naval Weapons Station Earle.  
July 1996. Brown & Root Environmental.)**

TABLE 1-2

**COMPARISON OF RI SURFACE SOIL ANALYTICAL DATA TO REGIONAL SCREENING LEVELS (RSLs)**  
**SITE 41 - MSC VAN PARKING AREA (EPIC SITE L)**  
**NAVAL WEAPONS STATION EARLE**  
**PAGE 1 OF 4**

SAMPLE LOCATION	LSS01	LSS02	LSS03	LSS03-DUP	LSS04	LSS05	LSS06	LSS07	EPA Regional Screening Levels (RSLs)	
DATA SOURCE	1995 RI, Dec.	1995 RI, Dec.	1995 RI, Dec.	1995 RI, Dec.	1995 RI, Dec.	1995 RI, Dec.	1995 RI, Dec.	1995 RI, Dec.	Residential Soil RSLs	Industrial Soil RSLs
<b>INORGANICS</b>	<b>mg/kg</b>	<b>mg/kg</b>	<b>mg/kg</b>	<b>mg/kg</b>	<b>mg/kg</b>	<b>mg/kg</b>	<b>mg/kg</b>	<b>mg/kg</b>	<b>mg/kg</b>	<b>mg/kg</b>
aluminum	612	1,450	977	1,100	1,710	879	1,470	300	7,700	n
antimony	2.8 U	2.6 U	2.6 U	2.6 U	2.6 U	2.5 U	2.6 U	2.8 U	3.1	n
arsenic	2.7	2.7	1.6	1.8	4.5	0.58 U	0.93	5.9	0.39	c
barium	2.4	24.3	1.6	2.2	10.4	0.56	17.1	18.2	1,500	n
beryllium	0.061 U	0.10	0.084 U	0.084 U	0.19	0.073	0.15	0.12	16	n
cadmium	0.075 U	0.51	1.0 J	0.59 U	0.16	0.069	0.27	0.52	7	n
calcium***	59.1	255	76.8	86.8	1,720	417	1,850	10,800	-	-
chromium, total	24.0	5.8	6.7	7.4	26.7	4.6	9.2	17.2	0.29*; 12,000**	5.6*; 150,000**
cobalt	0.14 U	0.31	0.86 U	0.86 U	0.41	0.15	0.39	2.0	2.3	n
copper	3.5	37.8 J	3.0	2.2	5.8 J	5.2	8.4 J	19.3	310	n
iron	5,000	3,280	7,060	7,390	8,860	2,390	3,880	7,700	5,500	n
lead	12.0	78.6	6.2 J	6.9 J	15.6	45.9	21.8	31.2	400	n
magnesium***	88.1	66.0	42.9	49.4	423	236	776	1,520	-	-
manganese	6.0	17.1	6.5 J	7.7 J	25.7	18.6	61.5	65.1	-	-
mercury	0.041	0.036	0.031	0.038	0.040	0.043	0.042	0.068	0.78	n
nickel	0.61	1.8	0.80 U	0.79 U	1.9	1.0	2.0	5.4	150	n
potassium***	211	49.2	63.2	73.7	642	60.8	195	552 U	-	-
selenium	0.63 UJ	0.58 UJ	0.58 UJ	0.57 UJ	0.59 UJ	0.56 UJ	0.59 UJ	0.62 UJ	39	n
silver	0.077 U	0.071 U	0.64 U	0.64 U	0.073 U	0.069 U	0.18	0.077 U	39	n
sodium***	30.9	24.5	19.8	13.5	33.0	27.4	54	278	-	-
thallium	0.87 U	0.80 U	0.80 U	0.79 U	0.8 U	0.78 U	0.82 U	0.86 U	0.078	n
vanadium	24.4	7.8	15.4 J	16.3 J	16.9	7.6	14.3	18.6 J	-	-
zinc	8.1 J	162 J	5.3	5.3	22.0 J	7.5 J	19.6 J	35.6	2,300	n
<b>SEMIVOLATILES</b>	<b>µg/kg</b>	<b>µg/kg</b>	<b>µg/kg</b>	<b>µg/kg</b>	<b>µg/kg</b>	<b>µg/kg</b>	<b>µg/kg</b>	<b>µg/kg</b>	<b>µg/kg</b>	<b>µg/kg</b>
1,2,4-trichlorobenzene	400 U	370 U	370 U	370 U	380 U	350 U	380 U	400 U	22,000	c
1,2-dichlorobenzene	400 U	370 U	370 U	370 U	380 U	350 U	380 U	400 U	190,000	n
1,3-dichlorobenzene	400 U	370 U	63.0 J	370 U	380 U	350 U	380 U	400 U	-	-
1,4-dichlorobenzene	400 U	370 U	63.0 J	370 U	380 U	350 U	380 U	400 U	2,400	c
2,2'-oxybis(1-chloropropane)	400 UJ	370 UJ	370 UJ	370 UJ	380 UJ	350 UJ	380 UJ	400 UJ	4,600	c
2,4,5-trichlorophenol	1000 U	920 U	920 U	920 U	940 U	890 U	940 U	1000 U	610,000	n
2,4,6-trichlorophenol	400 U	370 U	370 U	370 U	380 U	350 U	380 U	400 U	44,000	c
2,4-dichlorophenol	400 U	370 U	370 U	370 U	380 U	350 U	380 U	400 U	18,000	n
2,4-dimethylphenol	400 U	370 U	370 U	370 U	380 U	350 U	380 U	400 U	120,000	n
2,4-dinitrophenol	1000 U	920 U	920 U	920 U	940 U	890 U	940 U	1000 U	12,000	n
2,4-dinitrotoluene	400 U	370 U	370 U	370 UJ	380 UJ	350 UJ	380 UJ	400 U	1,600	c
2,6-dinitrotoluene	400 U	370 U	370 U	370 U	380 U	350 U	380 U	400 U	6,100	n
2-chloronaphthalene	400 U	370 U	370 U	370 U	380 U	350 U	380 U	400 U	630,000	n
2-chlorophenol	400 U	370 U	370 U	370 U	380 U	350 U	380 U	400 U	39,000	n
2-methylnaphthalene	400 U	370 U	370 U	370 U	380 U	350 U	380 U	400 U	23,000	n
2-methylphenol	400 U	370 U	370 U	370 U	380 U	350 U	380 U	400 U	310,000	n
2-nitroaniline	1000 U	920 U	920 U	920 U	940 U	890 U	940 U	1000 U	61,000	n
2-nitrophenol	400 U	370 U	370 U	370 U	380 U	350 U	380 U	400 U	-	-
3,3'-dichlorobenzidine	400 U	370 U	370 U	370 U	380 U	350 U	380 U	400 U	1,100	c
3-nitroaniline	1000 U	920 U	920 U	920 U	940 U	890 U	940 U	1000 U	-	-
4,6-dinitro-2-methylphenol	1000 U	920 U	920 U	920 U	940 U	890 U	940 U	1000 U	-	-
4-bromophenyl-phenylether	400 U	370 U	370 U	370 U	380 U	350 U	380 U	400 U	-	-
4-chloro-3-methylphenol	400 U	370 U	370 U	370 U	380 U	350 U	380 U	400 U	610,000	n
4-chloroaniline	400 U	370 U	370 U	370 U	380 U	350 U	380 U	400 U	2,400	c
4-chlorophenyl-phenylether	400 U	370 U	370 U	370 U	380 U	350 U	380 U	400 U	-	-
4-methylphenol	400 U	370 U	370 U	370 U	380 U	350 U	380 U	400 U	31,000	n
4-nitroaniline	1000 U	920 U	920 U	920 U	940 U	890 U	940 U	1000 U	24,000	c
4-nitrophenol	1000 U	920 U	920 U	920 U	940 U	890 U	940 U	1000 U	-	-

TABLE 1-2

**COMPARISON OF RI SURFACE SOIL ANALYTICAL DATA TO REGIONAL SCREENING LEVELS (RSLs)**  
**SITE 41 - MSC VAN PARKING AREA (EPIC SITE L)**  
**NAVAL WEAPONS STATION EARLE**  
**PAGE 2 OF 4**

SAMPLE LOCATION	LSS01	LSS02	LSS03	LSS03-DUP	LSS04	LSS05	LSS06	LSS07	EPA Regional Screening Levels (RSLs)	
DATA SOURCE	1995 RI, Dec.	1995 RI, Dec.	1995 RI, Dec.	1995 RI, Dec.	1995 RI, Dec.	1995 RI, Dec.	1995 RI, Dec.	1995 RI, Dec.	Residential Soil RSLs	Industrial Soil RSLs
N-nitroso-di-n-propylamine	400 U	370 U	370 U	370 U	380 U	350 U	380 U	400 U	69 c	250 c
N-nitrosodiphenylamine (1)	400 U	370 U	370 U	370 U	380 U	350 U	380 U	400 U	99,000 c	350,000 c
acenaphthene	400 U	370 U	370 U	47.0 J	380 U	350 U	380 U	66.0 J	340,000 n	3,300,000 n
acenaphthylene	400 U	370 U	370 U	370 U	380 U	350 U	380 U	42.0 J	-	-
anthracene	400 U	370 U	77.0 J	97.0 J	380 U	350 U	380 U	170 J	1,700,000 n	17,000,000 n
benzo(a)anthracene	400 U	370 U	160 J	220 J	71.0 J	350 U	380 U	630	150 c	2,100 c
benzo(a)pyrene	400 U	370 U	85.0 J	110 J	80.0 J	350 U	70.0 J	700	15 c	210 c
benzo(b)fluoranthene	400 U	370 U	1,100	1,200	160 J	350 U	160 J	960	150 c	2,100 c
benzo(g,h,i)perylene	400 U	370 U	98.0 J	110 J	380 U	350 U	380 U	520	-	-
benzo(k)fluoranthene	400 U	370 U	370 U	370 U	380 U	350 U	380 U	400 U	1,500 c	21,000 c
bis(2-chloroethoxy)methane	400 U	370 U	370 U	370 U	380 U	350 U	380 U	400 U	18,000 n	180,000 n
bis(2-chloroethyl)ether	400 U	370 U	43.0 J	370 U	380 U	350 U	380 U	400 U	210 c	1,000 c
bis(2-ethylhexyl)phthalate	400 U	370 U	370 U	370 U	380 U	350 U	380 U	400 U	35,000 c	120,000 c
butylbenzylphthalate	400 U	370 U	370 U	370 U	380 U	350 U	380 U	400 U	260,000 c	910,000 c
carbazole	400 U	370 U	190 J	240 J	380 U	350 U	380 U	55.0 J	-	-
chrysene	400 U	370 U	990	1,200	90 J	350 U	110 J	680	15,000 c	210,000 c
di-n-butylphthalate	400 U	370 U	370 U	370 U	380 U	350 U	380 U	400 U	610,000 n	6,200,000 n
di-n-octylphthalate	400 U	370 U	370 U	370 U	380 U	350 U	380 U	400 U	-	-
dibenz(a,h)anthracene	400 U	370 U	370 U	370 U	380 U	350 U	380 U	190 J	15 c	210 c
dibenzofuran	400 U	370 U	63.0 J	85.0 J	380 U	350 U	380 U	56.0 J	7,800 n	100,000 n
diethylphthalate	400 U	370 U	370 U	370 U	380 U	350 U	380 U	400 U	4,900,000 n	49,000,000 n
dimethylphthalate	400 U	370 U	370 U	370 U	380 U	350 U	380 U	400 U	-	-
fluoranthene	400 U	46.0 J	2,500	3,800	160 J	350 U	170 J	1,000	230,000 n	2,200,000 n
fluorene	400 U	370 U	370 U	53.0 J	380 U	350 U	380 U	120 J	230,000 n	2,200,000 n
hexachlorobenzene	400 U	370 U	370 U	370 U	380 U	350 U	380 U	400 U	300 c	1,100 c
hexachlorobutadiene	400 U	370 U	370 U	370 U	380 U	350 U	380 U	400 U	6,200 c	22,000 c
hexachlorocyclopentadiene	400 U	370 U	370 U	370 U	380 U	350 U	380 U	400 U	37,000 n	370,000 n
hexachloroethane	400 U	370 U	47.0 J	370 U	380 U	350 U	380 U	400 U	35,000 c	120,000 c
indeno(1,2,3-cd)pyrene	400 U	370 U	120 J	140 J	50 J	350 U	380 U	530	150 c	2,100 c
isophorone	400 U	370 U	370 U	370 U	380 U	350 U	380 U	400 U	510,000 c	1,800,000 c
naphthalene	400 U	370 U	43.0 J	370 U	380 U	350 U	380 U	45.0 J	3,600 c	18,000 c
nitrobenzene	400 U	370 U	370 U	370 U	380 U	350 U	380 U	400 U	4,800 c	24,000 c
pentachlorophenol	1000 U	920 U	920 U	920 U	940 U	890 U	940 U	1000 U	890 c	2,700 c
phananthrene	400 U	370 U	1,400	2,400	91.0 J	350 U	65.0 J	710	-	-
phenol	400 U	370 U	43.0 J	370 U	380 U	350 U	380 U	400 U	1,800,000 n	18,000,000 n
pyrene	400 U	370 U	1600	2,200	150 J	350 U	170 J	1,200	170,000 n	1,700,000 n
<b>VOLATILES</b>	<b>µg/kg</b>	<b>µg/kg</b>	<b>µg/kg</b>	<b>µg/kg</b>	<b>µg/kg</b>	<b>µg/kg</b>	<b>µg/kg</b>	<b>µg/kg</b>	<b>µg/kg</b>	<b>µg/kg</b>
1,1,1-trichloroethane	12.0 U	11.0 U	11.0 U	11.0 U	11.0 U	11.0 U	11.0 U	12.0 U	870,000 n	3,800,000 n
1,1,2,2-tetrachloroethane	12.0 U	11.0 U	11.0 U	11.0 U	11.0 U	11.0 U	11.0 U	12.0 U	560 c	2,800 c
1,1,2-trichloroethane	12.0 U	11.0 U	11.0 U	11.0 U	11.0 U	11.0 U	11.0 U	12.0 U	1,100 c	5,300 c
1,1-dichloroethane	12.0 U	11.0 U	11.0 U	11.0 U	11.0 U	11.0 U	11.0 U	12.0 U	3,300 c	17,000 c
1,1-dichloroethene	12.0 U	11.0 U	11.0 U	11.0 U	11.0 U	11.0 U	11.0 U	12.0 U	24,000 n	110,000 n
1,2-dichloroethane	12.0 U	11.0 U	11.0 U	11.0 U	11.0 U	11.0 U	11.0 U	12.0 U	430 c	2,200 c
1,2-dichloroethene (total)	12.0 U	11.0 U	11.0 U	11.0 U	11.0 U	11.0 U	11.0 U	12.0 U	70,000 n	920,000 n
1,2-dichloropropane	12.0 U	11.0 U	11.0 U	11.0 U	11.0 U	11.0 U	11.0 U	12.0 U	940 c	4,700 c
2-butanone	12.0 U	11.0 U	11.0 U	11.0 U	11.0 U	11.0 U	11.0 U	12.0 U	2,800,000 n	20,000,000 n
2-hexanone	12.0 U	11.0 U	11.0 U	11.0 U	11.0 U	11.0 U	11.0 U	12.0 U	21,000 n	140,000 n
4-methyl-2-pentanone	12.0 U	11.0 U	11.0 U	11.0 U	11.0 U	11.0 U	11.0 U	12.0 U	530,000 n	5,300,000 n
acetone	12.0 U	11.0 U	11.0 U	11.0 U	11.0 U	11.0 U	11.0 U	12.0 U	610,000 n	6,300,000 n
benzene	12.0 U	11.0 U	11.0 U	11.0 U	11.0 U	11.0 U	11.0 U	12.0 U	1,100 c	5,400 c

TABLE 1-2

**COMPARISON OF RI SURFACE SOIL ANALYTICAL DATA TO REGIONAL SCREENING LEVELS (RSLs)**  
**SITE 41 - MSC VAN PARKING AREA (EPIC SITE L)**  
**NAVAL WEAPONS STATION EARLE**  
**PAGE 3 OF 4**

SAMPLE LOCATION	LSS01		LSS02		LSS03		LSS03-DUP		LSS04		LSS05		LSS06		LSS07		EPA Regional Screening Levels (RSLs)	
DATA SOURCE	1995 RI, Dec.		1995 RI, Dec.		1995 RI, Dec.		1995 RI, Dec.		1995 RI, Dec.		1995 RI, Dec.		1995 RI, Dec.		1995 RI, Dec.		Residential Soil RSLs	Industrial Soil RSLs
bromodichloromethane	12.0	U	11.0	U	11.0	U	11.0	U	11.0	U	11.0	U	11.0	U	12.0	U	270	c
bromoform	12.0	U	11.0	U	11.0	U	11.0	U	11.0	U	11.0	U	11.0	U	12.0	U	62,000	c
bromomethane	12.0	UJ	11.0	UJ	11.0	UJ	11.0	UJ	11.0	UJ	11.0	UJ	11.0	UJ	12.0	UJ	730	n
carbon disulfide	12.0	U	11.0	U	11.0	U	11.0	U	11.0	U	11.0	U	11.0	U	12.0	U	82,000	n
carbon tetrachloride	12.0	U	11.0	U	11.0	U	11.0	U	11.0	U	11.0	U	11.0	U	12.0	U	610	c
chlorobenzene	12.0	U	11.0	U	11.0	U	11.0	U	11.0	U	11.0	U	11.0	U	12.0	U	29,000	n
chloroethane	12.0	U	11.0	U	11.0	U	11.0	U	11.0	U	11.0	U	11.0	UJ	12.0	U	1,500,000	n
chloroform	12.0	U	11.0	U	11.0	U	11.0	U	11.0	U	11.0	U	11.0	U	12.0	U	290	c
chloromethane	12.0	U	11.0	U	11.0	U	11.0	U	11.0	U	11.0	U	11.0	UJ	12.0	U	12,000	n
cis-1,3-dichloropropene	12.0	U	11.0	U	11.0	U	11.0	U	11.0	U	11.0	U	11.0	U	12.0	U	1,700	c
dibromochloromethane	12.0	U	11.0	U	11.0	U	11.0	U	11.0	U	11.0	U	11.0	U	12.0	U	680	c
ethylbenzene	12.0	U	11.0	U	11.0	U	11.0	U	11.0	U	11.0	U	11.0	U	12.0	U	5,400	c
methylene chloride	12.0	U	11.0	U	11.0	U	11.0	U	11.0	U	11.0	U	8.0	J	12.0	U	56,000	c
styrene	12.0	U	11.0	U	11.0	U	11.0	U	11.0	U	11.0	U	11.0	U	12.0	U	630,000	n
tetrachloroethene	12.0	U	11.0	U	11.0	U	11.0	U	11.0	U	11.0	U	11.0	U	12.0	U	22,000	c
toluene	12.0	U	11.0	U	11.0	U	11.0	U	11.0	U	11.0	U	11.0	U	12.0	U	500,000	n
trans-1,3-dichloropropene	12.0	U	11.0	U	11.0	U	11.0	U	11.0	U	11.0	U	11.0	U	12.0	U	1,700	c
trichloroethene	12.0	U	11.0	U	11.0	U	11.0	U	11.0	U	11.0	U	11.0	U	12.0	U	910	c
vinyl chloride	12.0	U	11.0	U	11.0	U	11.0	U	11.0	U	11.0	U	11.0	U	12.0	U	60	c
xylene (total)	12.0	U	11.0	U	11.0	U	11.0	U	11.0	U	11.0	U	11.0	U	12.0	U	63,000	n
<b>PESTICIDES/PCBS</b>	<b>µg/kg</b>		<b>µg/kg</b>		<b>µg/kg</b>		<b>µg/kg</b>		<b>µg/kg</b>		<b>µg/kg</b>		<b>µg/kg</b>		<b>µg/kg</b>		<b>µg/kg</b>	
4,4'-DDD	82.0	N J	3.7	U	3.7	U	3.7	U	9.8		3.5	U	0.48	R	4.9	N J	2,000	c
4,4'-DDE	120	J	3.7	U	3.7	U	3.7	U	96.0		3.6	U	1.6	J	28.0		1,400	c
4,4'-DDT	1500		2.3	J	2.1	N J	2.2	R	39.0		1.6	J	7.2		14.0		1,700	c
Aroclor-1016****	40.0	U	37.0	U	37.0	U	37.0	U	37.0	U	35.0	U	37.0	U	40.0	U	390	n
Aroclor-1221****	82.0	U	74.0	U	74.0	U	74.0	U	76.0	U	72.0	U	76.0	U	81.0	U	220	c
Aroclor-1232****	40.0	U	37.0	U	37.0	U	37.0	U	37.0	U	35.0	U	37.0	U	40.0	U	220	c
Aroclor-1242****	40.0	U	37.0	U	37.0	U	37.0	U	37.0	U	35.0	U	37.0	U	40.0	U	220	c
Aroclor-1248****	40.0	U	37.0	U	37.0	U	37.0	U	37.0	U	35.0	U	37.0	U	40.0	U	220	c
Aroclor-1254****	40.0	U	37.0	U	37.0	U	37.0	U	37.0	U	35.0	U	37.0	U	40.0	U	220	c
Aroclor-1260****	40.0	U	37.0	U	37.0	U	37.0	U	37.0	U	35.0	U	37.0	U	40.0	U	220	c
aldrin	2.1	U	1.9	U	1.8		1.9	U	1.9	U	1.8	U	1.9	U	2.0	U	29	c
alpha-BHC	2.1	U	1.9	U	1.9	U	1.9	U	1.9	U	1.8	U	1.9	U	2.0	U	77	c
alpha-chlordane	2.1	U	1.9	U	1.9	U	1.9	U	9.7	N J	1.8	U	0.42	N J	2.6	J	1,600	c
beta-BHC	2.1	U	1.9	U	1.9	U	1.9	U	1.9	U	1.8	U	1.9	U	2.0	U	270	c
delta-BHC	2.1	U	1.9	U	1.9	U	1.9	U	1.9	U	1.8	U	1.9	U	2.0	U	-	-
dieldrin	4.0	U	0.30	J	3.7	U	3.7	U	3.7	U	0.21	R	0.38	R	4.0	U	30	c
endosulfan I	2.1	U	1.9	U	1.9	U	1.9	U	1.9	U	1.8	U	1.9	U	2.0	U	37,000	
endosulfan II	4.0	U	3.7	U	3.7	U	6.7	R	3.7	U	3.5	U	3.7	U	4.0	U	37,000	
endosulfan sulfate	4.1	U	3.7	U	3.7	U	3.7	U	3.7	U	3.5	U	3.7	U	4.0	U	37,000	
endrin	4.0	U	3.7	U	3.7	U	3.7	U	3.7	U	3.5	U	3.7	U	4.0	U	1,800	n
endrin aldehyde	4.0	U	3.7	U	3.7	U	3.7	U	3.7	U	3.5	U	3.7	U	4.0	U	1,800	
endrin ketone	4.4	U	3.7	U	3.7	U	3.7	U	3.8	U	3.5	U	3.8	U	4.0	U	1,800	
gamma-BHC (Lindane)	2.1	U	1.9	U	0.35	R	0.57	R	1.9	U	1.8	U	1.9	U	0.14	R	520	c
gamma-chlordane	0.6	R	1.9	U	1.9	U	1.9	U	8.0		1.8	U	0.38	J	3.1		1,600	
heptachlor	2.1	U	0.17	J	1.9	U	1.9	U	0.27	N J	1.8	U	1.9	U	2.0	U	110	c
heptachlor epoxide	2.1	U	1.9	U	1.9	U	1.9	U	1.0	J	1.8	U	1.9	U	2.0	U	53	c
methoxychlor	20.0	U	19.0	U	5.8	N J	8.5	R	19.0	U	18.0	U	19.0	U	20.0	U	31,000	n
toxaphene	210.0	U	190.0	U	190	U	190	U	190	U	180	U	190	U	200	U	440	c

TABLE 1-2

**COMPARISON OF RI SURFACE SOIL ANALYTICAL DATA TO REGIONAL SCREENING LEVELS (RSLs)**  
**SITE 41 - MSC VAN PARKING AREA (EPIC SITE L)**  
**NAVAL WEAPONS STATION EARLE**  
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## Footnotes to soil criteria:

- \* Criteria shown for hexavalent (VI) chromium since the values are more stringent. Chromium speciation was not measured at the site. In soil, hexavalent chromium exists in strongly oxidizing and alkaline environments. Trivalent chromium exists in moderately oxidizing and reducing environments, which applies to most natural soils.
- \*\* Criteria shown for trivalent chromium for information only.
- Residential Lead criterion based on the USEPA integrated Exposure Uptake Biokinetic (IEUBK) model utilizing the default parameters. The concentration is considered to protect 95% of target population (children) at a blood lead level of 10 µg/dL.
- \*\*\* Calcium, magnesium, sodium, and potassium are essential nutrients and are therefore not applicable to evaluation for human health risks.
- c RSL is based on cancer risks.
- n RSL is based on noncancer hazards.
- \*\*\*\* The RSLs for PCBs are presented as total PCBs consistent with USEPA, 1996. PCBs: Cancer Dose-Response Assessment and Application to Environmental Mixtures. EPA/600/P-96/001F. Office of Research and Development, National Center for Environmental Assessment. Washington, DC.

## Footnotes to sample results:

- Shading denotes exceedance of EPA RSLs for Residential Contact with Soil. RSLs for noncarcinogens are multiplied by 0.1 for additivity across chemicals.
- NA Not Sampled
- J Value is estimated because concentration is below the quantitation limit or because of exceedances of data validation quality control criteria.
- N Compound is considered to be tentatively identified based on exceedance of QC criteria for compound identification.
- R Positive result is considered rejected based on exceedance of data validation quality control criteria.
- U Compound or element was not detected. Value is the detection limit (inorganics) or quantitation limit (organics).

## Sample Data Source:

Brown & Root Environmental. 1996. Remedial Investigation Report for Naval Weapons Station Earle, Colts Neck, New Jersey. Wayne, Pennsylvania. July.

## **SITE 41 WORKSHEETS**

**DATA USEABILITY WORKSHEET**  
**Site: NWS Earle Site 41 (EPIC Site L) – MSC Van Parking Lot**  
**Medium: Soil**

Activity	Comment
<b>Field Sampling</b>	
Discuss sampling problems and field conditions that affect data useability.	There were no apparent sampling or field problems that would affect data useability. The sampling was summarized in the 1996 RI report.
Are samples representative of receptor exposure for this medium (e.g. sample depth, grab vs composite, filtered vs unfiltered, low flow, etc.)?	Yes. Surface soil sample results are representative of locations of storage and/or material lay down areas within the site. Site continues to be actively used by NWS Earle Public Works Department for temporary storage of; stone, gravel, roadbed materials (i.e., concrete, asphalt), storm water drainage piping, etc. There was no evidence of waste burial or disposal at the site. Sampling was conducted in December 1995 for full TCL/TAL analytes and TPH.
Assess the effect of field QC results on data useability.	Field QA/QC samples included trip, rinsate, and field blanks, and one field duplicate. Data validation was performed and did not reveal any evidence of QC blank contamination originating in the field. Acceptable field precision was indicated by field duplicate results.
Summarize the effect of field sampling issues on the risk assessment, if applicable.	There were no field sampling issues identified that should affect the risk assessment.
<b>Analytical Techniques</b>	
Were the analytical methods appropriate for quantitative risk assessment?	Yes. Samples were analyzed for organic compounds following Contract Laboratory Program (CLP) routine analytical methods. Inorganic analyses were also performed according to CLP routine analysis methods.
Were detection limits adequate?	Yes. The method detection and quantitation limits achieved the CLP contract required detection limits (CRDLs) and contract required quantitation limits (CRQLs) for routine soil analysis.
Summarize the effect of analytical technique issues on the risk assessment, if applicable.	There were no analytical technique issues that should affect the risk assessment.
<b>Data Quality Objectives</b>	
Precision - How were duplicates handled?	Laboratory duplicates and matrix spikes/matrix spike duplicates were analyzed as required by the methods. Field duplicates were also collected. Region II Data Validation Guidance was followed to evaluate precision.
Accuracy - How were split samples handled?	No split samples were collected.

**DATA USEABILITY WORKSHEET (continued)**  
**Site: NWS Earle Site 41 (EPIC Site L) – MSC Van Parking Lot**  
**Medium: Soil**

Activity	Comment
<b>Data Quality Objectives (continued)</b>	
Representativeness - Indicate any problems associated with data representativeness (e.g., trip blank or rinsate blank contamination, chain of custody problems, etc.).	Laboratory blanks caused a few low level results to be qualified "U" for aldrin, 4,4'-DDE, endosulfan sulfate, methoxychlor, endrin aldehyde, and endrin ketone. No chain of custody issues were noted.
Completeness - Indicate any problems associated with data completeness (e.g., incorrect sample analysis, incomplete sample records, problems with field procedures, etc.).	No problems were associated with data completeness.
Comparability - Indicate any problems associated with data comparability.	No problems are anticipated with data comparability due to the use of routine CLP methods of analysis.
Were the DQOs specified in the QAPP satisfied?	The DQOs specified in the QAPP were met with respect to the frequency and types of field QA/QC samples, use of proper field QC preventative measures (e.g., decontamination and sample handling), and achieving successful analysis of 99 percent of analytes in samples (Only 10 results out of 1,203 results were rejected.)
Summarize the effect of DQO issues on the risk assessment, if applicable.	There were no DQO issues identified that should affect the risk assessment.
<b>Data Validation and Interpretation</b>	
What are the data validation requirements?	Data validation was conducted on 100 percent of the laboratory data following the Region II SOPs. Field samples were qualified based on field QC sample results and laboratory QC results per SOP guidelines.
What method or guidance was used to validate the data?	Laboratory data were validated in accordance with the QAPP requirements, which refer to Region II SOPs for Evaluation of Metals Data for CLP, Revision 1/92, and the SOP for CLP Organic Data Review, Revision 5/93.
Was the data validation method consistent with guidance? Discuss any discrepancies.	All validation qualifiers were applied in accordance with Region II SOP guidelines cited above. Recent changes were made to EPA Region II organic data validation SOPs HW-33, 35, 36, and 37, but the changes largely affect minor differences in the cutoff criteria for values to qualify estimated (J/UJ), which still leaves the data usable. Also, cutoff criteria for assessing organic blank contamination were restricted to qualify fewer sample results. However, no impacts were seen for this particular data set that would change the results used for the risk assessment.

**DATA USEABILITY WORKSHEET (continued)**  
**Site: NWS Earle Site 41 (EPIC Site L) – MSC Van Parking Lot**  
**Medium: Soil**

Activity	Comment
<b>Data Validation and Interpretation (continued)</b>	
Were all data qualifiers defined? Discuss those which were not.	Data qualifiers were defined in the footnotes to the analytical results tables.
Which qualifiers represent useable data?	Usable data were represented as positive results annotated with no qualifier or with a “J” qualifier, or as nondetected results with a “U” qualifier or a “UJ” qualifier. Pesticides with “NJ” qualifier (tentatively identified, estimated value) were also used.
Which qualifiers represent unuseable data?	Ten pesticide results were rejected (qualified “R”) based on high percent differences in the concentration results obtained on two gas chromatographic (GC) columns. Data qualified “U” for blank contamination were considered as not detected in the risk assessment.
How are tentatively identified compounds handled?	Tentatively identified compounds (TICs) were evaluated during data validation to determine if any target compounds were inadvertently missed and to determine if any classes of chemicals were present that were not adequately represented by the concurrent identification of one or more analogous target compounds belonging to the same chemical class.
Summarize the effect of data validation and interpretation issues on the risk assessment, if applicable.	There were no other significant issues in data interpretation or data validation. Data qualified as estimated “J” included organics detected below the CRQL, a few pesticides with high percent differences between two GC columns, and 6 metals qualified for serial dilution. Nondetects qualified estimated “UJ” included 1 metal qualified for matrix spike recovery and 5 organics qualified for calibration percent difference.
Additional notes:	No other problems were noted.

Note: The purpose of this Worksheet is to succinctly summarize the data useability analysis and conclusions. Reference specific pages in the Remedial Investigation and/or the Risk Assessment text to further expand on the information presented here.

## **DATA USEABILITY WORKSHEET**

**Site: NWS Earle Site 46 (EPIC Site Q) – Military Sealift Command Firefighting School**  
**Media: Soil, Sediment, and Groundwater**

Details regarding the EPIC Site Q sampling and analytical program and data quality objectives were presented in the NWS Earle Remedial Investigation (RI) Work Plan and Quality Assurance Project Plan (QAPP) (Halliburton NUS, 1995) and the NWS Earle RI report (Brown & Root Environmental, 1996). Relevant supporting information is summarized in the following paragraphs to facilitate the evaluation of data usability worksheets. The assessment for data usability is designed to evaluate whether the data are appropriate for use in the human health risk assessment.

EPIC Site Q occupies a 5.5-acre area at the southwestern corner of the NWS Earle Mainside Area. The fire-fighting school was built in 1975 and is used by the Navy and a variety of state and county groups to practice firefighting. The school is operated by the Military Sealift Command, which reports having all necessary operating permits and is inspected on a regular basis by the New Jersey Department of Environmental Protection (NJDEP). Prior to 2006 the facility had an oil/water separator and retention pond for the treatment of training wastewaters. The station also had a National Pollutant Discharge and Elimination System (NPDES) permit, which required regular monitoring and set discharge limits, for disposal of the water from the separator to the pond. Although water falling on the concrete pad was normally collected for treatment in the oil-water separator, there was some evidence noted that water flowed over the berm to the southeast portion of the pad. In 2006 the Military Sealift Command completed the installation of a closed loop collection system to contain the waters generated from the firefighting training exercises prior to sending them to an onsite facility for treatment and filtration prior to reuse. As a result, the NPDES permit has been terminated and the retention pond is no longer used.

Previous investigations included a 1992 Preliminary Assessment Addendum comprised of interview findings and aerial photo analyses. The primary objective of the RI was to determine potential impacts to various site media. The 1995 work plan for the NWS Earle RI was reviewed by EPA and responses and revisions were addressed by the Navy. Runoff over the berm in the southeast corner was a potential source to evaluate for impacting soils and groundwater. The groundwater investigation was designed as a screening tool to evaluate areas most likely to be potentially impacted from past firefighting training activities. Three temporary monitoring wells were constructed from 2-inch-diameter PVC and were screened across the water table at intervals from 4-10 feet and 10-20 feet. One sediment sample was collected to evaluate potential impacts to the pond near the outfall of the oil/water separator. Three subsurface soil samples were collected from two locations at depths of 2-4 feet, 4-6 feet, and 0.5-1.0 foot below the existing grade. Sample locations are shown in the attached Figure 29-1, extracted from the 1996 RI report.

During field sampling, no problems were encountered that would have suggested any issues with sampling precision, accuracy, representativeness, or completeness. As stated in Section 3.2 of the RI Work Plan, sampling was conducted according to Halliburton NUS Standard Operating Procedures (SOPs) and the New Jersey Department of Environmental Protection and Energy (NJDEPE) Field Sampling Procedures Manual.

## **DATA USEABILITY WORKSHEET (continued)**

**Site: NWS Earle Site 46 (EPIC Site Q) – Military Sealift Command Firefighting School**  
**Medium: Soil, Sediment, and Groundwater**

Groundwater, sediment, and soil samples were submitted to Lancaster Laboratories for Target Compound List (TCL) volatile organic compounds (VOCs) and TCL semivolatile organic compounds (SVOCs) analysis following low/medium concentration contract laboratory program (CLP) scopes of work (SOWs) and total petroleum hydrocarbons (TPH) analysis following EPA method 418.1. The laboratory's nominal quantitation limits achieved the method requirements referenced in the QAPP/work plan. The organic quantitation limits in the most recent version of the low/medium CLP analytical protocol (SOM01.2) are generally within a factor of two compared to the contract required quantitation limits (CRQLs) for the analytical methods applied in the 1995 RI (OLM01.8). For soil/sediment samples, nominal values for VOC CRQLs were 10 ug/kg, SVOC CRQLs 330 ug/kg (830 ug/kg for low response compounds), pesticide CRQLs 1.7 or 3.3 ug/kg (except for methoxychlor and toxaphene), and PCB CRQLs 33 ug/kg. In contrast, the current CLP SOW SOM01.2 specifies nominal values for VOC CRQLs of 5 ug/kg (10 for ketones), SVOC CRQLs of 170 ug/kg (330 for low response compounds), pesticide CRQLs of 1.7 or 3.3 ug/kg (except for methoxychlor and toxaphene), and PCB CRQLs of 33 ug/kg. In the 1995 RI, groundwater analysis achieved CRQLs of 10 ug/L for VOCs and SVOCs, which is compared to the current CLP SOW's low/medium concentration CRQLs of 5 ug/L and 10 ug/L for VOCs and 5 ug/L for SVOCs.

To evaluate the applicability of concentrations found in each medium, the detected soil, sediment, and groundwater concentrations were compared to screening levels derived from the Regional Screening Level (RSL) Tables available from <http://www.epa.gov/region9/superfund/prg/>. The RSLs are developed using risk assessment guidance from the EPA superfund program. The values are risk-based concentrations developed from standardized equations combining exposure information assumptions with EPA toxicity data. RSLs are considered by the agency to be protective for humans (including sensitive subgroups) under exposure conditions applicable to certain types of receptors. For example, the residential exposure RSLs are protective for humans over a lifetime, covering an exposure duration considered to represent the reasonable upper range duration living at one residence based on demographic studies. The industrial exposure RSLs are protective for adult workers over an exposure duration considered to be the reasonable upper range duration of employment at one company, based on employment studies. RSLs are not always applicable to the exposure scenarios unique to a particular site and do not address non-human health endpoints, such as ecological impacts. The chemical-specific RSLs are generic; they are calculated without site-specific information. Exposure assumptions may be recalculated using site-specific information during a baseline human health risk assessment (HHRA). In a HHRA, the goal of the comparison of detected concentrations to RSLs is to determine whether the concentrations found in the soil are within an acceptable limit, such that those chemicals that are present at concentrations that could contribute to significant risks (above RSLs) are carried through the quantitative risk assessment, while chemicals with concentrations less than RSLs do not require a detailed estimation of risks from site exposures.

Soil detected sample concentration limits and sample quantitation limits were compared to the May 2012 residential soil exposure and industrial soil exposure RSLs as tabulated in the right-hand columns of Table 1-3 (attached). The RSL values are based on surface soil contact by receptors established at a cancer risk level of  $1 \times 10^{-6}$  (one in a million risk) or a noncarcinogenic

## DATA USEABILITY WORKSHEET (continued)

**Site: NWS Earle Site 46 (EPIC Site Q) – Military Sealift Command Firefighting School**  
**Medium: Soil, Sediment, and Groundwater**

toxicity-based hazard index (HI) of 0.1 where the goal of protection is a cumulative HI of less than 1 for additivity across chemicals affecting the same target organ. The rationale for soil exposure assumes that soil at the site may be disturbed so as to become available at the surface for receptor contact (i.e., ingestion and dermal contact). The exceedance of either residential or industrial RSLs may still indicate that at concentrations equal to the detection limit, the potential risks may remain within the acceptable risk range (i.e., cancer risk between  $1 \times 10^{-6}$  and  $1 \times 10^{-4}$  or below the goal of protection of a HI of 1. For example, the concentration of 22 ppm in soil for 1,2,4-trichlorobenzene is based on a risk of  $1 \times 10^{-6}$  while the detection limit of 0.40 mg/kg is at a risk level of approximately  $2 \times 10^{-6}$  that remains within the risk range of  $1 \times 10^{-6}$  to  $1 \times 10^{-4}$ .

The SVOCs for which CRQLs were greater than their respective RSLs included hexachlorobenzene, pentachlorophenol, bis(2-chloroethyl)ether, and N-nitroso-di-N-propylamine. None of these substances were found in any soil samples or were anticipated to be found in the types of materials used or disposed at the site. Certain carcinogenic polycyclic aromatic hydrocarbons (PAHs) also exhibited detection limits that were greater than residential RSLs, including benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene. There were no detections of these PAHs. In addition, the flammable solvents used during firefighting training are associated with lighter hydrocarbons and not heavier PAHs.

Sediment detected sample concentration limits and sample quantitation limits were compared to the May 2012 residential soil exposure RSLs and the Sediment Ecological Toxicity Threshold Values as tabulated in the right-hand columns of Table 1-4 (attached). The RSL values are based on sediment direct contact (incidental ingestion or dermal absorption) by receptors, again established at a cancer risk level of  $1 \times 10^{-6}$  or a noncarcinogenic toxicity-based HI of 0.1 where the goal is a HI of less than 1 for additivity of chemicals affecting the same target organ. In sediment, SVOC sample quantitation limits were elevated because of the presence of alkane hydrocarbon chromatographic interferences requiring a 10-fold extract dilution and because of 72 percent moisture of the sample aliquot used for analysis, so that several of the SVOC sample quantitation limits were greater than their respective RSLs or Sediment Ecological Toxicity Threshold Values. For the same reasons, several VOCs displayed sample quantitation limits exceeding their respective RSLs or Sediment Ecological Toxicity Threshold Values, including cis-1,3-dichloropropene, trans-1,3-dichloropropene, 1,1,1-trichloroethane, 1,1-dichloroethene, carbon tetrachloride, chlorobenzene, vinyl chloride, and trichloroethene.

Table 1-5 (attached) compares groundwater sample quantitation limits to residential tap water RSLs and EPA MCLs. The RSL values are based on tap water contact by residential receptors established at a cancer risk level of  $1 \times 10^{-6}$  (one in a million risk) or a noncarcinogenic toxicity-based hazard index (HI) of 0.1. Twenty-one (21) VOCs and 34 SVOCs displayed sample quantitation limits exceeding their respective RSLs. Sample quantitation limits achieved QAPP requirements for CLP low/medium concentration protocols. Note that the objective of the temporary well sampling was to perform a screening level investigation for potential impacts to groundwater in those areas that would be potentially most impacted by any releases to see if further groundwater studies were needed.

**DATA USEABILITY WORKSHEET (continued)**

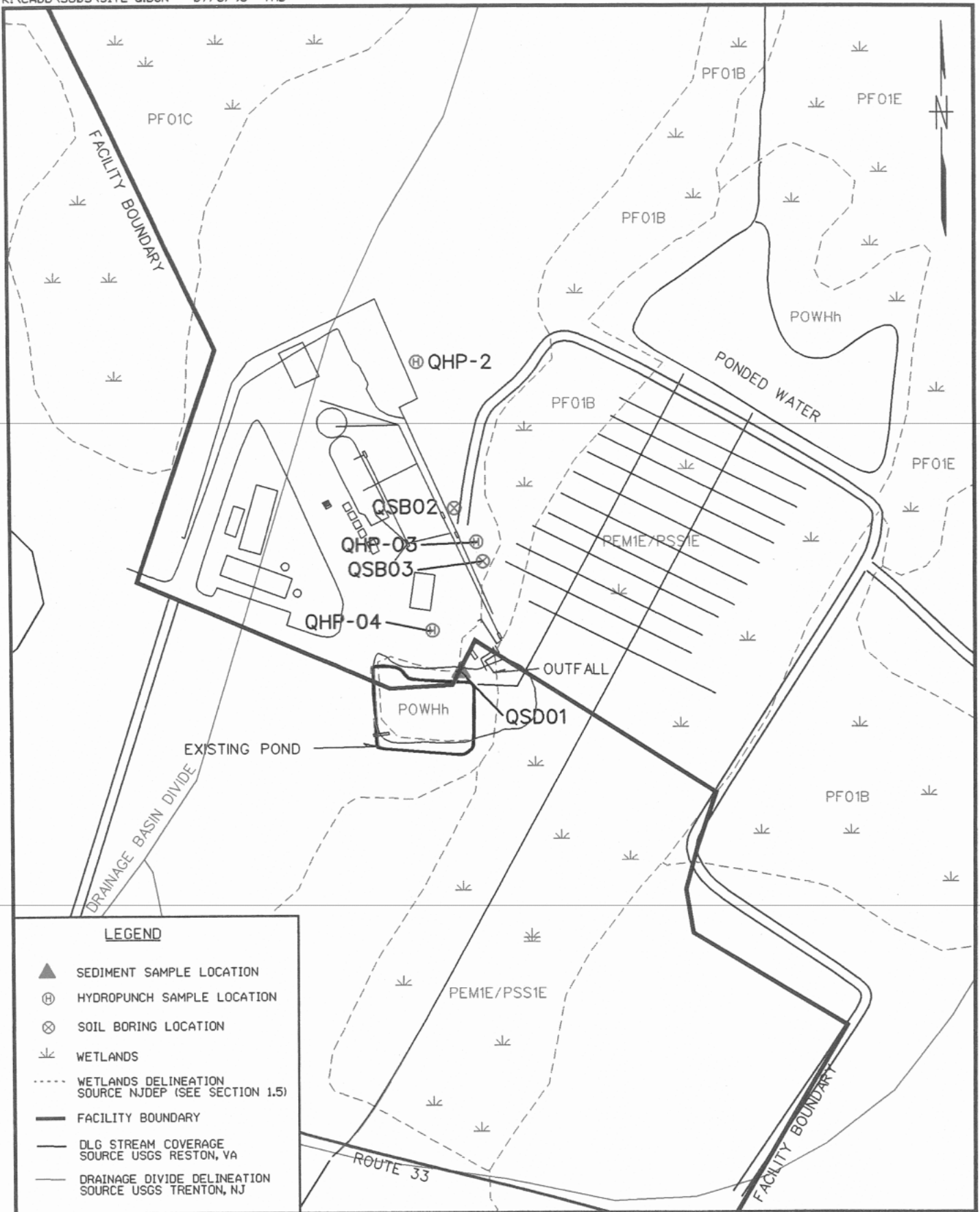
**Site: NWS Earle Site 46 (EPIC Site Q) – Military Sealift Command Firefighting School**

**Medium: Soil, Sediment, and Groundwater**

In summary, based on an evaluation of the data and comparison to RSLs, the analytical data are considered of appropriate quality for purposes of evaluation of potential human health risks.

**FIGURE 29-1**

**(Reference: Remedial Investigation Report for Naval Weapons Station Earle.  
July 1996. Brown & Root Environmental.)**



# **SAMPLE LOCATIONS** **EPIC SITE Q - FIRE FIGHTING SCHOOL**

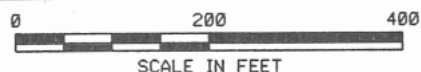


FIGURE 29-1



**Brown & Root Environmental**

**TABLE 1-3**

**(Reference: Remedial Investigation Report for Naval Weapons Station Earle.  
July 1996. Brown & Root Environmental.)**

TABLE 1-3

**COMPARISON OF RI SUBSURFACE SOIL ANALYTICAL DATA TO REGIONAL SCREENING LEVELS (RSLs)**  
**SITE 46 (EPIC SITE Q) - FIREFIGHTING SCHOOL**  
**NAVAL WEAPONS STATION EARLE**  
**PAGE 1 OF 2**

SAMPLE LOCATION	QSB02-02		QSB02-04		QSB03-01		EPA Regional Screening Levels (RSLs)			
SAMPLE DEPTH	2-4 feet		4-6 feet		0.5-1 foot					
DATA SOURCE	1995 RI, Dec.		1995 RI, Dec.		1995 RI, Dec.		Residential Soil RSLs		Industrial Soil RSLs	
SEMIVOLATILES	µg/kg		µg/kg		µg/kg		µg/kg		µg/kg	
1,2,4-trichlorobenzene	400	U	400	U	390	U	22,000	c	99,000	c
1,2-dichlorobenzene	400	U	400	U	390	U	190,000	n	980,000	n
1,3-dichlorobenzene	400	U	400	U	390	U	-		-	
1,4-dichlorobenzene	400	U	400	U	390	U	2,400	c	12,000	c
2,2'-oxybis(1-chloropropane)	400	U	400	U	390	U	4,600	c	22,000	c
2,4,5-trichlorophenol	1,000	U	1,000	U	980	U	610,000	n	6,200,000	n
2,4,6-trichlorophenol	400	U	400	U	390	U	44,000	c	160,000	c
2,4-dichlorophenol	400	U	400	U	390	U	18,000	n	180,000	n
2,4-dimethylphenol	400	U	400	U	390	U	120,000	n	1,200,000	n
2,4-dinitrophenol	1,000	U	1,000	U	980	U	12,000	n	120,000	n
2,4-dinitrotoluene	400	U	400	U	390	U	1,600	c	5,500	c
2,6-dinitrotoluene	400	U	400	U	390	U	6,100	n	62,000	n
2-chloronaphthalene	400	U	400	U	390	U	630,000	n	8,200,000	n
2-chlorophenol	400	U	400	U	390	U	39,000	n	510,000	n
2-methylnaphthalene	600		700		390	U	23,000	n	220,000	n
2-methylphenol	400	U	400	U	390	U	310,000	n	3,100,000	n
2-nitroaniline	1,000	U	1,000	U	980	U	61,000	n	600,000	n
2-nitrophenol	400	U	400	U	390	U	-		-	
3,3'-dichlorobenzidine	400	U	400	U	390	U	1,100	c	3,800	c
3-nitroaniline	1,000	U	1,000	U	980	U	-		-	
4,6-dinitro-2-methylphenol	1000	U	1000	U	980	U	-		-	
4-bromophenyl-phenylether	400	U	400	U	390	U	-		-	
4-chloro-3-methylphenol	400	U	400	U	390	U	610,000	n	6,200,000	n
4-chloroaniline	400	U	400	U	390	U	2,400	c	8,600	c
4-chlorophenyl-phenylether	400	U	400	U	390	U	-		-	
4-methylphenol	400	U	400	U	390	U	31,000	n	310,000	n
4-nitroaniline	1,000	U	1,000	U	980	U	24,000	c	86,000	c
4-nitrophenol	1,000	U	1,000	U	980	U	-		-	
N-nitroso-di-n-propylamine	400	U	400	U	390	U	69	c	250	c
N-nitrosodiphenylamine (1)	400	U	400	U	390	U	99,000	c	350,000	c
acenaphthene	56.0	J	63.0	J	390	U	340,000	n	3,300,000	n
acenaphthylene	400	U	400	U	390	U	-		-	
anthracene	400	U	400	U	390	U	1,700,000	n	17,000,000	n
benzo(a)anthracene	400	U	400	U	390	U	150	c	2,100	c
benzo(a)pyrene	400	U	400	U	390	U	15	c	210	c
benzo(b)fluoranthene	400	U	400	U	390	U	150	c	2,100	c
benzo(g,h,i)perylene	400	U	400	U	390	U	-		-	
benzo(k)fluoranthene	400	U	400	U	390	U	1,500	c	21,000	c
bis(2-chloroethoxy)methane	400	U	400	U	390	U	18,000	n	180,000	n
bis(2-chloroethyl)ether	400	U	400	U	390	U	210	c	1,000	c
bis(2-ethylhexyl)phthalate	400	U	400	U	390	U	35,000	c	120,000	c
butylbenzylphthalate	400	U	400	U	390	U	260,000	c	910,000	c
carbazole	400	U	400	U	390	U	-		-	
chrysene	400	U	400	U	390	U	15,000	c	210,000	c
di-n-butylphthalate	400	U	400	U	390	U	610,000	n	6,200,000	n
di-n-octylphthalate	400	U	400	U	390	U	-		-	
dibenz(a,h)anthracene	400	U	400	U	390	U	15	c	210	c
dibenzofuran	74.0	J	77.0	J	390	U	7,800	n	100,000	n
diethylphthalate	400	U	400	U	390	U	4,900,000	n	49,000,000	n
dimethylphthalate	400	U	400	U	390	U	-		-	
fluoranthene	400	U	400	U	390	U	230,000	n	2,200,000	n
fluorene	110	J	120	J	390	U	230,000	n	2,200,000	n
hexachlorobenzene	400	U	400	U	390	U	300	c	1,100	c
hexachlorobutadiene	400	U	400	U	390	U	6,200	c	22,000	c
hexachlorocyclopentadiene	400	U	400	U	390	U	37,000	n	370,000	n
hexachloroethane	400	U	400	U	390	U	12,000	c	43,000	c
indeno(1,2,3-cd)pyrene	400	U	400	U	390	U	150	c	2,100	c
isophorone	400	U	400	U	390	U	510,000	c	1,800,000	c
naphthalene	44.0	J	400	U	390	U	3,600	c	18,000	c
nitrobenzene	400	U	400	U	390	U	4,800	c	24,000	c
pentachlorophenol	1000	U	1000	U	980	U	890	c	2,700	c
phananthrene	260	J	250	J	390	U	-		-	
phenol	400	U	400	U	390	U	1,800,000	n	18,000,000	n
pyrene	400	U	400	U	390	U	170,000	n	1,700,000	

TABLE 1-3

**COMPARISON OF RI SUBSURFACE SOIL ANALYTICAL DATA TO REGIONAL SCREENING LEVELS (RSLs)**  
**SITE 46 (EPIC SITE Q) - FIREFIGHTING SCHOOL**  
**NAVAL WEAPONS STATION EARLE**  
**PAGE 2 OF 2**

SAMPLE LOCATION	QSB02-02		QSB02-04		QSB03-01		EPA Regional Screening Levels (RSLs)		
SAMPLE DEPTH	2-4 feet		4-6 feet		0.5-1 foot				
DATA SOURCE	1995 RI, Dec.		1995 RI, Dec.		1995 RI, Dec.		Residential Soil RSLs		Industrial Soil RSLs
VOLATILES	µg/kg		µg/kg		µg/kg		µg/kg		µg/kg
1,1,1-trichloroethane	12.0	U	12.0	U	12.0	U	870,000	n	3,800,000
1,1,2,2-tetrachloroethane	12.0	U	12.0	U	12.0	U	560	c	2,800
1,1,2-trichloroethane	12.0	U	12.0	U	12.0	U	1,100	c	5,300
1,1-dichloroethane	12.0	U	12.0	U	12.0	U	3,300	c	17,000
1,1-dichloroethene	12.0	U	12.0	U	12.0	U	24,000	n	110,000
1,2-dichloroethane	12.0	U	12.0	U	12.0	U	430	c	2,200
1,2-dichloroethene (total)	12.0	U	12.0	U	12.0	U	70,000	n	920,000
1,2-dichloropropane	12.0	U	12.0	U	12.0	U	940	c	4,700
2-butanone	12.0	U	12.0	U	12.0	U	2,800,000	n	20,000,000
2-hexanone	12.0	U	12.0	U	12.0	U	21,000	n	140,000
4-methyl-2-pentanone	12.0	U	12.0	U	12.0	U	530,000	n	5,300,000
acetone	67.0	U	17.0	U	12.0	U	610,000	n	6,300,000
benzene	12.0	U	12.0	U	12.0	U	1,100	c	5,400
bromodichloromethane	12.0	U	12.0	U	12.0	U	270	c	1,400
bromoform	12.0	U	12.0	U	12.0	U	62,000	c	220,000
bromomethane	12.0	U	12.0	U	12.0	U	730	n	3,200
carbon disulfide	12.0	U	12.0	U	12.0	U	82,000	n	370,000
carbon tetrachloride	12.0	U	12.0	U	12.0	U	610	c	3,000
chlorobenzene	12.0	U	12.0	U	12.0	U	29,000	n	140,000
chloroethane	12.0	U	12.0	U	12.0	U	1,500,000	n	6,100,000
chloroform	12.0	U	12.0	U	12.0	U	290	c	1,500
chloromethane	12.0	U	12.0	U	12.0	U	12,000	n	50,000
cis-1,3-dichloropropene	12.0	U	12.0	U	12.0	U	1,700	c	8,300
dibromochloromethane	12.0	U	12.0	U	12.0	U	680	c	3,300
ethylbenzene	12.0	U	12.0	U	12.0	U	5,400	c	27,000
methylene chloride	12.0	U	12.0	U	12.0	U	56,000	c	960,000
styrene	12.0	U	12.0	U	12.0	U	630,000	n	3,600,000
tetrachloroethene	12.0	U	12.0	U	12.0	U	22,000	c	110,000
toluene	12.0	U	12.0	U	12.0	U	500,000	n	4,500,000
trans-1,3-dichloropropene	12.0	U	12.0	U	12.0	U	1,700	c	8,300
trichloroethene	2.0	J	55.0		9.0	J	910	c	6,400
vinyl chloride	12.0	U	12.0	U	12.0	U	60	c	1,700
xylene (total)	12.0	U	12.0	U	12.0	U	63,000	n	270,000

## Footnotes to sample results:

	Shading denotes detection limits exceed EPA Regional Screening Levels (RSLs) for Residential Soils.
NA	Not Sampled
J	Value is estimated because concentration is below the quantitation limit or because of exceedances of data validation quality control criteria.
N	Compound is considered to be tentatively identified based on exceedance of QC criteria for compound identification.
R	Positive result is considered rejected based on exceedance of data validation quality control criteria.
U	Compound or element was not detected. Value is the detection limit (inorganics) or quantitation limit (organics).
c	RSL is based on cancer risks.
n	RSL is based on noncancer hazards.

Note: EPA Regional screening levels are multiplied by 0.1 for noncarcinogens to account for potential additivity of noncancer effects.

## Sample Data Source:

Brown & Root Environmental. 1996. Remedial Investigation Report for Naval Weapons Station Earle, Colts Neck, New Jersey. Wayne, Pennsylvania. July.

**TABLE 1-4**

**(Reference: Remedial Investigation Report for Naval Weapons Station Earle.  
July 1996. Brown & Root Environmental.)**

TABLE 1-4

**COMPARISON OF RI SEDIMENT ANALYTICAL DATA TO RSLs, ARARS, AND TBCs**  
**SITE 46 (EPIC SITE Q) - FIREFIGHTING SCHOOL**  
**NAVAL WEAPONS STATION EARLE**  
**PAGE 1 OF 2**

SAMPLE LOCATION	QSD01		EPA Regional Screening		EPA Regional Screening		ARARS & TBCs
DATA SOURCE	1995 RI, Dec.		Levels (RSLs) for Residential Soil		Levels (RSLs) for Industrial Soil		Sediment Ecological Toxicity Threshold Values
SEMIVOLATILES	µg/kg		µg/kg		µg/kg		µg/kg
1,2,4-trichlorobenzene	12,000	U	22,000	c	99,000	c	2,100
1,2-dichlorobenzene	12,000	U	190,000	n	980,000	n	16.5
1,3-dichlorobenzene	12,000	U	-		-		4,430
1,4-dichlorobenzene	12,000	U	2,400	c	12,000	c	599
2,2'-oxybis(1-chloropropane)	12,000	U	4,600	c	22,000	c	-
2,4,5-trichlorophenol	30,000	U	610,000	n	6,200,000	n	-
2,4,6-trichlorophenol	12,000	U	44,000	c	160,000	c	213
2,4-dichlorophenol	12,000	U	18,000	n	180,000	n	117
2,4-dimethylphenol	12,000	U	120,000	n	1,200,000	n	29
2,4-dinitrophenol	30,000	U	12,000	n	120,000	n	-
2,4-dinitrotoluene	12,000	U	1,600	c	5,500	c	41.6
2,6-dinitrotoluene	12,000	U	6,100	n	62,000	n	-
2-chloronaphthalene	12,000	U	630,000	n	8,200,000	n	-
2-chlorophenol	12,000	U	39,000	n	510,000	n	31.2
2-methylnaphthalene	12,000	U	23,000	n	220,000	n	20.2
2-methylphenol	12,000	U	310,000	n	3,100,000	n	-
2-nitroaniline	30,000	U	61,000	n	600,000	n	-
2-nitrophenol	21,000	U	-		-		-
3,3'-dichlorobenzidine	12,000	U	1,100	c	3,800	c	127
3-nitroaniline	30,000	U	-		-		-
4,6-dinitro-2-methylphenol	30,000	U	-		-		-
4-bromophenyl-phenylether	12,000	U	-		-		1,230
4-chloro-3-methylphenol	12,000	U	610,000	n	6,200,000	n	-
4-chloroaniline	12,000	U	2,400	c	8,600	c	-
4-chlorophenyl-phenylether	12,000	U	-		-		-
4-methylphenol	12,000	U	31,000	n	310,000	n	670
4-nitroaniline	30,000	U	24,000	c	86,000	c	-
4-nitrophenol	30,000	U	-		-		-
N-nitroso-di-n-propylamine	12,000	U	69	c	250	c	2,680
N-nitrosodiphenylamine (1)	12,000	U	99,000	c	350,000	c	-
acenaphthene	12,000	U	340,000	n	3,300,000	n	6.7
acenaphthylene	12,000	U	-		-		5.9
anthracene	12,000	U	1,700,000	n	17,000,000	n	57.2
benzo(a)anthracene	12,000	U	150	c	2,100	c	108
benzo(a)pyrene	12,000	U	15	c	210	c	150
benzo(b)fluoranthene	1,600	J	150	c	2,100	c	27.2
benzo(g,h,i)perylene	12,000	U	-		-		170
benzo(k)fluoranthene	12,000	U	1,500	c	21,000	c	27.2
bis(2-chloroethoxy)methane	12,000	U	18,000	n	180,000	n	-
bis(2-chloroethyl)ether	12,000	U	210	c	1,000	c	-
bis(2-ethylhexyl)phthalate	12,000	U	35,000	c	120,000	c	180
butylbenzyl phthalate	12,000	U	260,000	c	910,000	c	10,900
carbazole	12,000	U	-		-		-
chrysene	1,300	J	15,000	c	210,000	c	340
di-n-butylphthalate	12,000	U	610,000	n	6,200,000	n	6,470
di-n-octylphthalate	12,000	U	-		-		-
dibenz(a,h)anthracene	12,000	U	15	c	210	c	33
dibenzofuran	12,000	U	7,800	n	100,000	n	415
diethylphthalate	1,500	J	4,900,000	n	49,000,000	n	603
dimethylphthalate	12,000	U	-		-		-
fluoranthene	12,000	U	230,000	n	2,200,000	n	423
fluorene	12,000	U	230,000	n	2,200,000	n	77.4
hexachlorobenzene	12,000	U	300	c	1,100	c	20
hexachlorobutadiene	12,000	U	6,200	c	22,000	c	-
hexachlorocyclopentadiene	12,000	U	37,000	n	370,000	n	-
hexachloroethane	12,000	U	35,000	c	120,000	c	1027
indeno(1,2,3-cd)pyrene	12,000	U	150	c	2,100	c	17
isophorone	12,000	U	510,000	c	1,800,000	c	-
naphthalene	12,000	U	3,600	c	18,000	c	176
nitrobenzene	12,000	U	4,800	c	24,000	c	-
pentachlorophenol	30,000	U	890	c	2,700	c	504
phananthrene	12,000	U	-		-		204
phenol	12,000	U	1,800,000	n	18,000,000	n	420
pyrene	3,300	J	170,000	n	1,700,000	n	490

TABLE 1-4

**COMPARISON OF RI SEDIMENT ANALYTICAL DATA TO RSLs, ARARS, AND TBCs**  
**SITE 46 (EPIC SITE Q) - FIREFIGHTING SCHOOL**  
**NAVAL WEAPONS STATION EARLE**  
**PAGE 2 OF 2**

SAMPLE LOCATION	QSD01	EPA Regional Screening		EPA Regional Screening		ARARS & TBCs
DATA SOURCE	1995 RI, Dec.	Levels (RSLs) for Residential Soil		Levels (RSLs) for Industrial Soil		Sediment Ecological Toxicity Threshold Values
VOLATILES	µg/kg	µg/kg		µg/kg		µg/kg
1,1,1-trichloroethane	180 U	870,000	n	3,800,000	n	30.2
1,1,2,2-tetrachloroethane	180 U	560	c	2,800	c	1,360
1,1,2-trichloroethane	180 U	1,100	c	5,300	c	1,240
1,1-dichloroethane	180 U	3,300	c	17,000	c	-
1,1-dichloroethene	180 U	24,000	n	110,000	n	31
1,2-dichloroethane	180 U	430	c	2,200	c	-
1,2-dichloroethene (total)	180 U	70,000	n	920,000	n	1,050
1,2-dichloropropane	180 U	940	c	4,700	c	-
2-butanone	180 U	2,800,000	n	20,000,000	n	-
2-hexanone	180 U	21,000	n	140,000	n	-
4-methyl-2-pentanone	180 U	530,000	n	5,300,000	n	-
acetone	390 U	610,000	n	6,300,000	n	-
benzene	180 U	1,100	c	5,400	c	-
bromodichloromethane	180 U	270	c	1,400	c	-
bromoform	180 U	62,000	c	220,000	c	654
bromomethane	180 U	730	n	3,200	n	-
carbon disulfide	180 U	82,000	n	370,000	n	0.851
carbon tetrachloride	180 U	610	c	3,000	c	64.2
chlorobenzene	180 U	29,000	n	140,000	n	8.42
chloroethane	180 U	1,500,000	n	6,100,000	n	-
chloroform	180 U	290	c	1,500	c	-
chloromethane	180 U	12,000	n	50,000	n	-
cis-1,3-dichloropropene	180 U	1,700	c	8,300	c	0.0509
dibromochloromethane	180 U	680	c	3,300	c	-
ethylbenzene	180 U	5,400	c	27,000	c	1,100
methylene chloride	180 U	56,000	c	960,000	c	-
styrene	180 U	630,000	n	3,600,000	n	559
tetrachloroethene	180 U	22,000	c	110,000	c	468
toluene	180 U	500,000	n	4,500,000	n	-
trans-1,3-dichloropropene	180 U	1,700	c	8,300	c	0.0509
trichloroethene	180 U	910	c	6,400	c	96.9
vinyl chloride	180 U	60	c	1,700	c	-
xylene (total)	93.0 J	63,000	n	270,000	n	120

## Footnotes to sample results:

Shading denotes detection limits exceed ARARs and/or TBCs or EPA RSLs for Residential Contact with Soil.  
RSLs for noncarcinogens are multiplied by 0.1 for additivity across chemicals.

J

Value is estimated because concentration is below the quantitation limit or because of exceedances of data validation quality control criteria.

U Compound or element was not detected. Value is the detection limit (inorganics) or quantitation limit (organics).

c RSL is based on cancer risks.

n RSL is based on noncancer hazards.

## Ecological Screening Level References:

USEPA (U.S. Environmental Protection Agency), 2006. Region III BTAG Freshwater Sediment Screening Benchmarks. Philadelphia, Pennsylvania. August.  
NJDEP Ecological Screening Criteria, July 2008.

## Sample Data Source:

Brown & Root Environmental. 1996. Remedial Investigation Report for Naval Weapons Station Earle, Colts Neck, New Jersey. Wayne, Pennsylvania. July.

**TABLE 1-5**

**(Reference: Remedial Investigation Report for Naval Weapons Station Earle.  
July 1996. Brown & Root Environmental.)**

TABLE 1-5

**COMPARISON OF RI GROUNDWATER ANALYTICAL DATA TO SCREENING LEVELS**  
**SITE 46 (EPIC SITE Q) - FIREFIGHTING SCHOOL**  
**NAVAL WEAPONS STATION EARLE**  
**PAGE 1 OF 2**

SAMPLE LOCATION	Q-HP-04		Q-HP-03		Q-HP-02		Screening Levels	
DATA SOURCE	1995 RI, Dec.		1995 RI, Dec.		1995 RI, Dec.		EPA Tapwater RSL	EPA MCL
<b>VOLATILES</b>	<b>µg/L</b>		<b>µg/L</b>		<b>µg/L</b>		<b>µg/L</b>	<b>µg/L</b>
1,1,1-trichloroethane	10	U	10	U	10	U	750 n	200
1,1,2,2-tetrachloroethane	10	U	10	U	10	U	0.066 c	
1,1,2-trichloroethane	10	U	10	U	10	U	0.24 c	5
1,1-dichloroethane	10	U	10	U	10	U	2.4 c	
1,1-dichloroethene	10	U	10	U	10	U	26 n	7
1,2-dichloroethane	10	U	10	U	10	U	0.15 c	5
1,2-dichloroethene (total)	10	U	10	U	10	U	13 n	
1,2-dichloropropane	10	U	10	U	10	U	0.38 c	5
2-butanone	10	U	10	U	10	U	490 n	
2-hexanone	10	U	10	U	10	U	3.4 n	
4-methyl-2-pentanone	10	U	10	U	10	U	100 n	
acetone	10	U	4	J	2	J	1200 n	
benzene	10	U	10	U	10	U	0.39 c	5
bromodichloromethane	10	U	10	U	10	U	0.12 c	8.0E+01(F)
bromoform	10	U	10	U	10	U	7.9 c	8.0E+01(F)
bromomethane	10	U	10	U	10	U	0.7 n	
carbon disulfide	10	U	10	U	10	U	72 n	
carbon tetrachloride	10	U	10	U	10	U	0.39 c	5
chlorobenzene	10	U	10	U	10	U	7.2 n	100
chloroethane	10	U	10	U	10	U	2100 n	
chloroform	8	J	10	U	14		0.19 c	8.0E+01(F)
chloromethane	10	U	10	U	10	U	19 n	
cis-1,3-dichloropropene	10	U	10	U	10	U	0.41 c	
dibromochloromethane	10	U	10	U	10	U	0.15 c	8.0E+01(F)
ethylbenzene	10	U	10	U	10	U	1.3 c	700
methylene chloride	10	U	10	U	10	U	9.9 c	5
styrene	10	U	10	U	10	U	110 n	100
tetrachloroethene	10	U	10	U	10	U	9.7 c	5
toluene	10	U	10	U	10	U	86 n	1000
trans-1,3-dichloropropene	10	U	10	U	10	U	0.41	
trichloroethene	10	U	10	U	10	U	0.44 c	5
vinyl chloride	10	U	10	U	10	U	0.015 c	2
xylene (total)	10	U	10	U	10	U	19 n	10000
<b>SEMIVOLATILES</b>	<b>µg/L</b>		<b>µg/L</b>		<b>µg/L</b>		<b>µg/L</b>	<b>µg/L</b>
1,2,4-trichlorobenzene	10	U	10	U	10	U	0.99 c	70
1,2-dichlorobenzene	10	U	10	U	10	U	28 n	600
1,3-dichlorobenzene	10	U	10	U	10	U	-	-
1,4-dichlorobenzene	10	U	10	U	10	U	0.42 c	75
2,2'-oxybis(1-chloropropane)	10	U	10	U	10	U	0.31 c	
2,4,5-trichlorophenol	25	U	25	U	25	U	89 n	
2,4,6-trichlorophenol	10	U	10	U	10	U	3.5 c	
2,4-dichlorophenol	10	U	10	U	10	U	3.5 n	
2,4-dimethylphenol	10	U	10	U	10	U	27 n	
2,4-dinitrophenol	25	U	25	U	25	U	3 n	
2,4-dinitrotoluene	10	U	10	U	10	U	0.2 c	
2,6-dinitrotoluene	10	U	10	U	10	U	1.5 n	
2-chloronaphthalene	10	U	10	U	10	U	55 n	
2-chlorophenol	10	U	10	U	10	U	7.1 n	
2-methylnaphthalene	10	U	3	J	10	U	2.7 n	
2-methylphenol	10	U	10	U	10	U	72 n	
2-nitroaniline	25	U	25	U	25	U	15 n	
2-nitrophenol	10	U	10	U	10	U	-	-
3,3'-dichlorobenzidine	10	U	10	U	10	U	0.11 c	
3-nitroaniline	25	U	25	U	25	U	-	-
4,6-dinitro-2-methylphenol	25	U	25	U	25	U	-	-
4-bromophenyl-phenylether	10	U	10	U	10	U	-	-
4-chloro-3-methylphenol	10	U	10	U	10	U	110 n	
4-chloroaniline	10	U	10	U	10	U	0.32 c	

TABLE 1-5

**COMPARISON OF RI GROUNDWATER ANALYTICAL DATA TO SCREENING LEVELS  
SITE 46 (EPIC SITE Q) - FIREFIGHTING SCHOOL  
NAVAL WEAPONS STATION EARLE  
PAGE 2 OF 2**

SAMPLE LOCATION	Q-HP-04	Q-HP-03	Q-HP-02	Screening Levels	
DATA SOURCE	1995 RI, Dec.	1995 RI, Dec.	1995 RI, Dec.	EPA Tapwater RSL	EPA MCL
4-chlorophenyl-phenylether	10 U	10 U	10 U	-	-
4-methylphenol	10 U	10 U	10 U	140 n	
4-nitroaniline	25 U	25 U	25 U	3.3 c	
4-nitrophenol	25 U	25 U	25 U	-	-
N-nitroso-di-n-propylamine	10 U	10 U	10 U	0.0093 c	
N-nitrosodiphenylamine (1)	10 U	10 U	10 U	10 c	
acenaphthene	10 U	10 U	10 U	40 n	
acenaphthylene	10 U	10 U	10 U	-	-
anthracene	10 U	10 U	10 U	1300 n	
benzo(a)anthracene	10 U	10 U	10 U	0.029 c	
benzo(a)pyrene	10 U	10 U	10 U	0.0029 c	0.2
benzo(b)fluoranthene	10 U	10 U	10 U	0.029 c	
benzo(g,h,i)perylene	10 U	10 U	10 U	-	-
benzo(k)fluoranthene	10 U	10 U	10 U	0.29 c	
bis(2-chloroethoxy)methane	10 U	10 U	10 U	4.7 n	
bis(2-chloroethyl)ether	10 U	10 U	10 U	0.012 c	
bis(2-ethylhexyl)phthalate	3 J	10 U	1 J	0.071 c	6
butylbenzylphthalate	10 U	10 U	10 U	14 c	
carbazole	10 U	10 U	10 U	-	-
chrysene	10 U	10 U	10 U	2.9 c	
di-n-butylphthalate	10 U	10 U	10 U	67 n	
di-n-octylphthalate	10 U	10 U	10 U	-	-
dibenz(a,h)anthracene	10 U	10 U	10 U	0.0029 c	
dibenzofuran	10 U	10 U	10 U	0.58 n	
diethylphthalate	10 U	10 U	10 U	1100 n	
dimethylphthalate	10 U	10 U	10 U	-	-
fluoranthene	10 U	10 U	10 U	63 n	
fluorene	10 U	10 U	10 U	22 n	
hexachlorobenzene	10 U	10 U	10 U	0.042 c	1
hexachlorobutadiene	10 U	10 U	10 U	0.26 c	
hexachlorocyclopentadiene	10 U	10 U	10 U	2.2 n	50
hexachloroethane	10 U	10 U	10 U	0.79 c	
indeno(1,2,3-cd)pyrene	10 U	10 U	10 U	0.029 c	
isophorone	10 U	10 U	10 U	67 c	
naphthalene	10 U	2 J	10 U	0.14 c	
nitrobenzene	10 U	10 U	10 U	0.12 c	
pentachlorophenol	25 U	25 U	25 U	0.17 c	1
phenanthrene	10 U	10 U	10 U	-	-
phenol	10 U	10 U	10 U	450 n	
pyrene	10 U	10 U	10 U	8.7 n	

## Footnotes to sample results:

- J Shading denotes detection limits exceed EPA Regional Screening Levels (RSLs) for Tapwater.  
Value is estimated because concentration is below the quantitation limit or because of exceedances of data validation quality control criteria.
- U Compound or element was not detected. Value is the detection limit (inorganics) or quantitation limit (organics).
- c RSL is based on cancer risks.
- n RSL is based on noncancer hazards.

Note: EPA Regional screening levels are multiplied by 0.1 for noncarcinogens to account for potential additivity of noncancer effects.

## Sample Data Source:

Brown & Root Environmental. 1996. Remedial Investigation Report for Naval Weapons Station Earle, Colts Neck, New Jersey. Wayne, Pennsylvania. July.

## **SITE 46 WORKSHEETS**

## DATA USEABILITY WORKSHEET

**Site: NWS Earle Site 46 (EPIC Site Q) – Military Sealift Command Firefighting School**  
**Media: Soil**

Activity	Comment
<b>Field Sampling</b>	
Discuss sampling problems and field conditions that affect data useability.	There were no apparent sampling or field problems that would affect data useability.
Are samples representative of receptor exposure for this medium (e.g. sample depth, grab vs composite, filtered vs unfiltered, low flow, etc.)?	Yes. Subsurface soil sample results are representative of potential locations where runoff originating from the fire training area may have impacted the subsurface soil. Soil boring samples from location QSB02 (2-4 feet and 4-6 feet) represent soil depths under the concrete pad with elevated HNu readings where runoff may have infiltrated cracks in the containment pad. One soil sample from QSB03 (0.5-1 foot) represents the soil depth where runoff may have flowed over the berm and infiltrated exposed soil. Sampling was conducted in December 1995 for TCL VOCs and SVOCs and TPH.
Assess the effect of field QC results on data useability.	Field QA/QC samples included trip, rinsate, and field blanks. Data validation was performed and did not reveal any evidence of QC blank contamination originating in the field.
Summarize the effect of field sampling issues on the risk assessment, if applicable.	There were no field sampling issues identified that should affect the risk assessment.
<b>Analytical Techniques</b>	
Were the analytical methods appropriate for quantitative risk assessment?	Yes. Samples were analyzed for organic compounds following Contract Laboratory Program (CLP) routine analytical methods. TPH analytical methods were used to evaluate evidence of contamination but not to estimate risks. TCL VOC and SVOC analytes include components of TPH with toxic properties.
Were detection limits adequate?	Yes. The method quantitation limits achieved the CLP contract required quantitation limits (CRQLs) for routine soil analysis.
Summarize the effect of analytical technique issues on the risk assessment, if applicable.	There were no analytical technique issues that should affect the risk assessment.

**DATA USEABILITY WORKSHEET (continued)**  
**Site: NWS Earle Site 46 (EPIC Site Q) – Military Sealift Command Firefighting School**  
**Medium: Soil**

Activity	Comment
<b>Data Quality Objectives</b>	
Precision - How were duplicates handled?	Laboratory matrix spikes/matrix spike duplicates were analyzed as required by the methods. No field duplicates were collected at this NWS Earle site due to the limited number of soil samples. Region II Data Validation Guidance was followed to evaluate precision.
Accuracy - How were split samples handled?	No split samples were collected.
Representativeness - Indicate any problems associated with data representativeness (e.g., trip blank or rinsate blank contamination, chain of custody problems, etc.).	Laboratory blanks revealed low level results for bis(2-ethylhexyl) phthalate, 2-butanone, acetone, and methylene chloride. Associated sample results were qualified as nondetected ("U"). No chain of custody issues were noted.
Completeness - Indicate any problems associated with data completeness (e.g., incorrect sample analysis, incomplete sample records, problems with field procedures, etc.).	No problems were associated with data completeness.
Comparability - Indicate any problems associated with data comparability.	No problems are anticipated with data comparability due to the use of routine CLP methods of analysis.
Were the DQOs specified in the QAPP satisfied?	The DQOs specified in the QAPP were met with respect to the frequency and types of field QA/QC samples, use of proper field QC preventative measures (e.g., decontamination and sample handling), and achieving successful analysis of 100 percent of analytes in samples (No results were rejected out of the data set).
Summarize the effect of DQO issues on the risk assessment, if applicable.	There were no DQO issues identified that should affect the risk assessment.
<b>Data Validation and Interpretation</b>	
What are the data validation requirements?	Data validation was conducted on 100 percent of the laboratory data following the Region II SOPs. Field samples were qualified based on field QC sample results and laboratory QC results per SOP guidelines.

**DATA USEABILITY WORKSHEET (continued)**  
**Site: NWS Earle Site 46 (EPIC Site Q) – Military Sealift Command Firefighting School**  
**Medium: Soil**

Activity	Comment
<b>Data Validation and Interpretation (continued)</b>	
What method or guidance was used to validate the data?	Laboratory data were validated in accordance with the QAPP requirements, which refer to the Region II SOP for CLP Organic Data Review, Revision 5/93. TPH data were validated using the analogous requirements in the Region II SOP for Evaluation of Metals Data for CLP, Revision 1/92.
Was the data validation method consistent with guidance? Discuss any discrepancies.	All validation qualifiers were applied in accordance with Region II SOP guidelines cited above. Recent changes were made to EPA Region II organic data validation SOPs HW-33 and HW- 35, but the changes largely affect minor differences in the cutoff criteria for values to qualify estimated (J/UJ), which still leaves the data usable. Also, cutoff criteria for assessing organic blank contamination were restricted to qualify fewer sample results. However, no impacts were seen for this particular data set that would change the results used for the risk assessment.
Were all data qualifiers defined? Discuss those which were not.	Data qualifiers were defined in the footnotes to the analytical results tables.
Which qualifiers represent useable data?	Usable data were represented as positive results annotated with no qualifier or with a “J” qualifier, or as nondetected results with a “U” qualifier.
Which qualifiers represent unuseable data?	No analytical results were qualified as unusable or rejected (“R”).
How are tentatively identified compounds handled?	Tentatively identified compounds (TICs) were evaluated during data validation to determine if any target compounds were inadvertently missed and to determine if any classes of chemicals were present that were not adequately represented by the concurrent identification of one or more analogous target compounds belonging to the same chemical class.
Summarize the effect of data validation and interpretation issues on the risk assessment, if applicable.	There were no other significant issues in data interpretation or data validation. Data qualified as estimated “J” included organics detected below the CRQL.
Additional notes:	No other problems were noted.

Note: The purpose of this Worksheet is to succinctly summarize the data useability analysis and conclusions. Reference specific pages in the Remedial Investigation and/or the Risk Assessment text to further expand on the information presented here.

## DATA USEABILITY WORKSHEET

**Site: NWS Earle Site 46 (EPIC Site Q) – Military Sealift Command Firefighting School**  
**Medium: Sediment**

Activity	Comment
<b>Field Sampling</b>	
Discuss sampling problems and field conditions that affect data useability.	There were no apparent sampling or field problems that would affect data useability.
Are samples representative of receptor exposure for this medium (e.g. sample depth, grab vs composite, filtered vs unfiltered, low flow, etc.)?	Yes. Sediment sample results are representative of the pond area potentially impacted by discharges prior to installation of the oil-water separator upgrades. Sampling was conducted in December 1995 for TCL VOCs and SVOCs and TPH.
Assess the effect of field QC results on data useability.	Field QA/QC samples included trip, rinsate, and field blanks. Data validation was performed and did not reveal any evidence of QC blank contamination originating in the field.
Summarize the effect of field sampling issues on the risk assessment, if applicable.	There were no field sampling issues identified that should affect the risk assessment.
<b>Analytical Techniques</b>	
Were the analytical methods appropriate for quantitative risk assessment?	Yes. Samples were analyzed for organic compounds following Contract Laboratory Program (CLP) routine analytical methods. TPH analytical methods were used to evaluate evidence of contamination but not to estimate risks. TCL VOC and SVOC analyses include components of TPH with toxic properties.
Were detection limits adequate?	The laboratory achieved the CLP contract required quantitation limits (CRQLs) on a wet-weight and undiluted instrument level basis. However, the sediment sample contained high percent moisture and alkane hydrocarbon chromatographic interferences that necessitated extract dilution prior to analysis. This had some impact on sample quantitation limits.
Summarize the effect of analytical technique issues on the risk assessment, if applicable.	Sample quantitation limits were somewhat elevated due to alkane hydrocarbons and sediment percent moisture.
<b>Data Quality Objectives</b>	
Precision - How were duplicates handled?	Laboratory matrix spikes/matrix spike duplicates were analyzed as required by the methods. No field duplicates were collected at this NWS Earle site due to the limited number of sediment samples. Region II Data Validation Guidance was applied to evaluate precision.

**DATA USEABILITY WORKSHEET (continued)**  
**Site: NWS Earle Site 46 (EPIC Site Q) – Military Sealift Command Firefighting School**  
**Medium: Sediment**

<b>Activity</b>	<b>Comment</b>
<b>Data Quality Objectives (continued)</b>	
Accuracy - How were split samples handled?	No split samples were collected.
Representativeness - Indicate any problems associated with data representativeness (e.g., trip blank or rinsate blank contamination, chain of custody problems, etc.).	Laboratory blanks revealed low level results for bis(2-ethylhexyl) phthalate, 2-butanone, acetone, and methylene chloride. Any associated sample results were qualified as nondetected ("U"). No chain of custody issues were noted.
Completeness - Indicate any problems associated with data completeness (e.g., incorrect sample analysis, incomplete sample records, problems with field procedures, etc.).	No problems were associated with data completeness.
Comparability - Indicate any problems associated with data comparability.	No problems are anticipated with data comparability due to the use of routine CLP methods of analysis.
Were the DQOs specified in the QAPP satisfied?	The DQOs specified in the QAPP were met with respect to the frequency and types of field QA/QC samples, use of proper field QC preventative measures (e.g., decontamination and sample handling), and achieving successful analysis of 100 percent of analytes in samples (No results were rejected out of the data set).
Summarize the effect of DQO issues on the risk assessment, if applicable.	There were no DQO issues identified that should affect the risk assessment.
<b>Data Validation and Interpretation</b>	
What are the data validation requirements?	Data validation was conducted on 100 percent of the laboratory data following the Region II SOPs. Field samples were qualified based on field QC sample results and laboratory QC results per SOP guidelines.
What method or guidance was used to validate the data?	Organic data were validated in accordance with the QAPP requirements, which refer to the Region II SOP for CLP Organic Data Review, Revision 5/93. TPH data were validated using the analogous requirements in the Region II SOP for Evaluation of Metals Data for CLP, Revision 1/92.
Was the data validation method consistent with guidance? Discuss any discrepancies.	All validation qualifiers were applied in accordance with Region II SOP guidelines cited above. Recent changes were made to EPA Region II organic data validation SOPs HW-33 and HW- 35, but this mainly affected thresholds to qualify (J/UJ), so data are usable.

**DATA USEABILITY WORKSHEET (continued)**  
**Site: NWS Earle Site 46 (EPIC Site Q) – Military Sealift Command Firefighting School**  
**Medium: Sediment**

Activity	Comment
<b>Data Validation and Interpretation (continued)</b>	
Were all data qualifiers defined? Discuss those which were not.	Data qualifiers were defined in the footnotes to the analytical results tables.
Which qualifiers represent useable data?	Usable data were represented as positive results annotated with no qualifier or with a “J” qualifier, or as nondetected results with a “U” qualifier.
Which qualifiers represent unuseable data?	No analytical results were qualified as unusable or rejected (“R”).
How are tentatively identified compounds handled?	Tentatively identified compounds (TICs) were evaluated during data validation to determine if any target compounds were inadvertently missed and to determine if any classes of chemicals were present that were not adequately represented by the concurrent identification of one or more analogous target compounds belonging to the same chemical class.
Summarize the effect of data validation and interpretation issues on the risk assessment, if applicable.	There were no other significant issues in data interpretation or data validation. Data qualified as estimated “J” included organics detected below the CRQL.
Additional notes:	No other problems were noted.

Note: The purpose of this Worksheet is to succinctly summarize the data useability analysis and conclusions. Reference specific pages in the Remedial Investigation and/or the Risk Assessment text to further expand on the information presented here.

## DATA USEABILITY WORKSHEET

**Site: NWS Earle Site 46 (EPIC Site Q) – Military Sealift Command Firefighting School**  
**Medium: Groundwater**

Activity	Comment
<b>Field Sampling</b>	
Discuss sampling problems and field conditions that affect data useability.	There were no apparent sampling or field problems that would affect data useability.
Are samples representative of receptor exposure for this medium (e.g. sample depth, grab vs composite, filtered vs unfiltered, low flow, etc.)?	Yes. Groundwater sample results are representative of potential locations where runoff originating from the fire training area may have flowed through cracks in the containment pad or over a berm and infiltrated soil and eventually groundwater. Sampling was conducted in December 1995 for TCL VOCs and SVOCs and TPH.
Assess the effect of field QC results on data useability.	Field QA/QC samples included trip, rinsate, and field blanks, but these results were included within a different laboratory SDG report. Data validation was performed and did not reveal any evidence of QC blank contamination originating in the field.
Summarize the effect of field sampling issues on the risk assessment, if applicable.	There were no field sampling issues identified that should affect the risk assessment.
<b>Analytical Techniques</b>	
Were the analytical methods appropriate for quantitative risk assessment?	Yes. Samples were analyzed for organic compounds following Contract Laboratory Program (CLP) routine analytical methods. TPH analytical methods were used to evaluate evidence of contamination but not to estimate risks. TCL VOC and SVOC analyses include components of TPH with toxic properties.
Were detection limits adequate?	Yes. The method quantitation limits achieved the CLP contract required quantitation limits (CRQLs) for low/medium concentration analysis as per the QAPP.
Summarize the effect of analytical technique issues on the risk assessment, if applicable.	There were no analytical technique issues that should affect the risk assessment.
<b>Data Quality Objectives</b>	
Precision - How were duplicates handled?	Laboratory matrix spikes/matrix spike duplicates were analyzed as required by the methods. No field duplicates were collected at this NWS Earle site due to the limited number of groundwater samples. Region II Data Validation Guidance was used to assess precision.
Accuracy - How were split samples handled?	No split samples were collected.

**DATA USEABILITY WORKSHEET (continued)**  
**Site: NWS Earle Site 46 (EPIC Site Q) – Military Sealift Command Firefighting School**  
**Medium: Groundwater**

Activity	Comment
<b>Data Quality Objectives (continued)</b>	
Representativeness - Indicate any problems associated with data representativeness (e.g., trip blank or rinsate blank contamination, chain of custody problems, etc.).	No problems were noted that impacted sample results associated with laboratory blanks or field QC blanks. No chain of custody issues were noted.
Completeness - Indicate any problems associated with data completeness (e.g., incorrect sample analysis, incomplete sample records, problems with field procedures, etc.).	No problems were associated with data completeness.
Comparability - Indicate any problems associated with data comparability.	No problems are anticipated with data comparability due to the use of routine CLP methods of analysis.
Were the DQOs specified in the QAPP satisfied?	The DQOs specified in the QAPP were met with respect to the frequency and types of field QA/QC samples, use of proper field QC preventative measures (e.g., decontamination and sample handling), and achieving successful analysis of 100 percent of analytes in samples (No results were rejected out of the data set).
Summarize the effect of DQO issues on the risk assessment, if applicable.	There were no DQO issues identified that should affect the risk assessment.
<b>Data Validation and Interpretation</b>	
What are the data validation requirements?	Data validation was conducted on 100 percent of the laboratory data following the Region II SOPs. Field samples were qualified based on QC measurement data per SOP guidelines.
What method or guidance was used to validate the data?	Organic data were validated in accordance with the QAPP requirements, which refer to the Region II SOP for CLP Organic Data Review, Revision 5/93. TPH data were validated using the analogous requirements in the Region II SOP for Evaluation of Metals Data for CLP, Revision 1/92.
Was the data validation method consistent with guidance? Discuss any discrepancies.	All validation qualifiers were applied in accordance with Region II SOP guidelines cited above. Recent changes were made to EPA Region II organic data validation SOPs HW-33 and HW- 35, but this mainly affected thresholds to qualify (J/UJ), so data are usable.
Were all data qualifiers defined? Discuss those which were not.	Data qualifiers were defined in the footnotes to the analytical results tables.

**DATA USEABILITY WORKSHEET (continued)**  
**Site: NWS Earle Site 46 (EPIC Site Q) – Military Sealift Command Firefighting School**  
**Medium: Groundwater**

Activity	Comment
<b>Data Validation and Interpretation (continued)</b>	
Which qualifiers represent useable data?	Usable data were represented as positive results annotated with no qualifier or with a “J” qualifier, or as nondetected results with a “U” qualifier.
Which qualifiers represent unuseable data?	No analytical results were qualified as unusable or rejected (“R”).
How are tentatively identified compounds handled?	Tentatively identified compounds (TICs) were evaluated during data validation to determine if any target compounds were inadvertently missed and to determine if any classes of chemicals were present that were not adequately represented by the concurrent identification of one or more analogous target compounds belonging to the same chemical class.
Summarize the effect of data validation and interpretation issues on the risk assessment, if applicable.	There were no other significant issues in data interpretation or data validation. Data qualified as estimated “J” included organics detected below the CRQL.
Additional notes:	No other problems were noted.

Note: The purpose of this Worksheet is to succinctly summarize the data useability analysis and conclusions. Reference specific pages in the Remedial Investigation and/or the Risk Assessment text to further expand on the information presented here.